SERVICE MANUAL
SEPTEMBER 2024

ABSolu®

IMAGING
EXCELLENCE

Quantel medical
BY LUMIBIRD MEDICAL

A/B/S/UBM Ultrasound Platform

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2018 CE 0459

Directive 93/42/EEC

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ABSolu® Service Manual
Software Version 1.0.5 and over
International version (Ref.: MT00046D)
September 9, 2024

TABLE OF CONTENTS

1. INTRODUCTION

This Service Manual provides ABSolu technical information. It covers the following subjects:

- Spare parts.
- How to disassemble the unit (and connectors pin description).
- Probes management and calibration.
- Database management.
- Software installation.
- Servicing the unit.

NOTE
For detailed reglementary and user information or technical specifications, refer to these sections in the ABSolu User Manual:

- User manual: Introduction.
  - Packing list (main units, probes, options).
  - Accessories and consumables list.
- User manual: I – Regulatory & Safety information.
  - Regulatory and safety information.
  - HIPAA compliance.
- User manual: II – Technical information.
  - Labelling information.
  - Technical specifications.
  - EMC data and guidelines.

2. SERVICE MANUAL TERMS AND SAFETY SYMBOLS

WARNING
Potential hazards which, if not avoided, could result in serious injury or death.

CAUTION
Potential hazards which, if not avoided, could result in minor or moderate injury and/or product damage.

NOTE
Significant additional information or explanation.

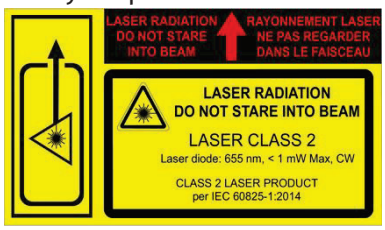
3. WARNINGS & CAUTIONS

These warnings and cautions are intended for technicians in charge of device maintenance.

Refer to the **ABSolu User Manual: I – Regulatory & Safety information** to find general warnings and cautions concerning the use of the ABSolu, probes care and storage, and infection transfer prevention.

WARNING
Before servicing the unit, read these warnings:

- Warranty will be void unless the following recommendations are strictly respected:
  - Any adjustment and calibration procedure described in this manual shall be performed by QUANTEL MEDICAL authorized technicians only or by personnel who has been previously trained by QUANTEL MEDICAL.
  - Any faulty part should/will be replaced by a strictly identical one provided by QUANTEL MEDICAL.
  - For safety reasons, QUANTEL MEDICAL considers any electronic board as a whole partial assembly: Defective boards must be returned to QUANTEL MEDICAL for replacement. Warranty will be void if a board has been damaged during servicing or an attempt to repair.
- A special training delivered by QUANTEL MEDICAL is required for any technicians prior to perform maintenance on the equipment to ensure optimum adjustments and maximum instrument reliability.
- The ProBeam is an optional probe with a laser aiming beam. It thus emits laser radiation. Avoid direct eye exposure:

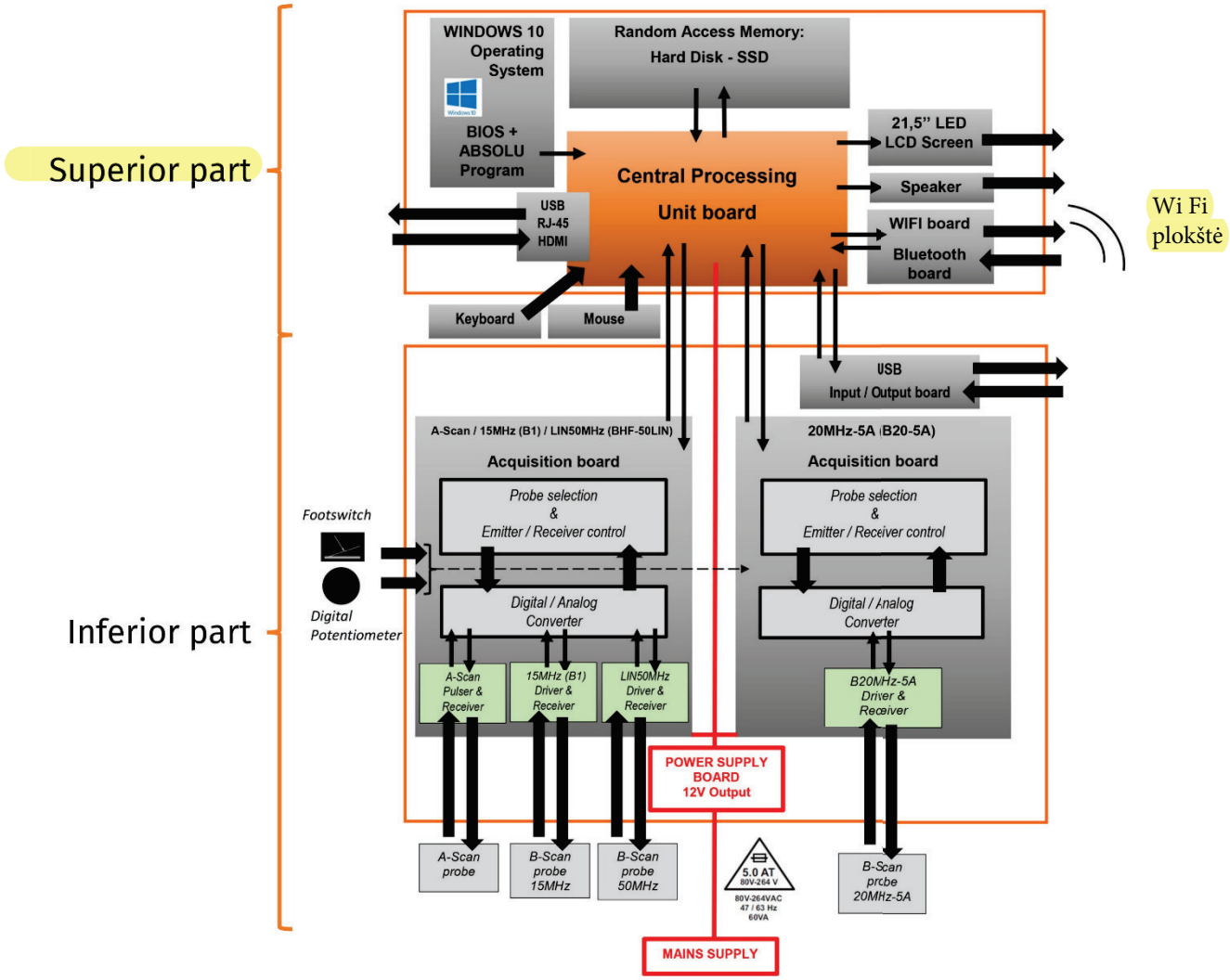


LASER RADIATION LABEL DANGER

CAUTION
Before performing any maintenance or repair on the equipment, ensure that all the database, as well as the system/user configuration and parameters have been saved in order to restore them afterwards if needed.

4. BLOCK DIAGRAM

The block diagram below visualizes the principal parts and their relationships within the ABSolu system.



5. MAIN UNIT AND ACCESSORIES

5.1 Main units, probes, and options

Shared ABSolu elements	Reference	Probes included
	Main unit	
• 2 probe holders. • Footswitch. • Protective cover. • Mouse pad. • Book “Modern Update of Ocular and Orbital Ultrasound”. • E-User manual. • E-Quick Start. • Power cord.	**PCBX0037A1B**	**ABSolu B** Mode including: 15Mhz Probe (B1)
	PCBX0037A1AB	**ABSolu A/B** Mode including: Biometry Probe 15MHz Probe (B1)
	PCBX0037A1LAB	**ABSolu A/B** Mode including: Biometry Probe with Laser Aiming Beam (ProBeam™) 15MHz Probe (B1)
	PCBX0037A2V	**ABSolu B** Mode including: 20Mhz-5A Annular Probe (B20-5A)
	PCBX0037A2AV	**ABSolu A/B** Mode including: 20Mhz-5A Annular Probe (B20-5A) Biometry Probe
	PCBX0037A2LAV	**ABSolu A/B** Mode including: 20Mhz-5A Annular Probe (B20-5A) Biometry Probe with Laser Aiming Beam (ProBeam™)

Shared ABSolu S elements	Reference	Probes included:
	Main unit	
• Standardized A Probe. • Tissue model. • 2 probe holders. • Footswitch. • Protective cover. • Mouse pad. • Book “Modern Update of Ocular and Orbital Ultrasound”. • E-User manual. • E-QuickStart. • Power cord.	**PCBX0037S1S**	**ABSolu S** including: Standardized A Probe
	PCBX0037S1A	**ABSolu S** including: Standardized A Probe Biometry Probe
	PCBX0037S1LA	**ABSolu S** including: Standardized A Probe Biometry Probe with Laser Aiming Beam (ProBeam™)
	PCBX0037S1B	**ABSolu S and B Mode** including: Standardized A Probe 15Mhz Probe (B1)
	PCBX0037S1AB	**ABSolu S and A/B Mode** including: Standardized A Probe Biometry Probe 15Mhz Probe (B1)
	PCBX0037S1LAB	**ABSolu S and A/B Mode** including: Standardized A Probe Biometry Probe with Laser Aiming Beam (ProBeam™) 15Mhz Probe (B1)
	PCBX0037S2V	**ABSolu S and B Mode** including: Standardized A Probe 20Mhz-5A Annular Probe (B20-5A)
	PCBX0037S2AV	**ABSolu S and A/B Mode** including: Standardized A Probe 20Mhz-5A Annular Probe (B20-5A) Biometry Probe
	PCBX0037S2LAV	**ABSolu A/B Mode** including: Standardized A Probe 20Mhz-5A Annular Probe (B20-5A) Biometry Probe with Laser Aiming Beam (ProBeam™)

Reference	Probes
PCSX0003	**20Mhz-5A Annular Probe (B20-5A)** including Probe Holder, Finger Grip Sleeve, Installation Software on USB Key
PCSX0005	**15MHz Probe (B1)** including Probe Holder, Finger Grip Sleeve, and Installation Software on USB key
PCSX0007	**LIN 50MHz Probe (BHF-50LIN)** including 1 Pack of 10 Filmed Windows + 1 Cap, Calibration Tool, Distilled Water (pack of 5 single doses), 2 ClearScan, Probe Holder, and Installation Software on USB key
PCSX0009	**Biometry Option** including Biometry Probe, Test Bloc, and Installation Software on USB Key
PCSX0010	**ProBeam™ Option** including Biometry Probe with Laser Aiming Beam, Test Bloc, and Installation Software on USB Key

Reference	Options
PCBX0056	**20MHz Option** including **20MHz-5A Annular Probe (B20-5A)** and its **ERM Board**, Probe Holder, Finger Grip Sleeve, Installation Software on USB Key
PCBX0037SUP	**S Option** including: **Standardized A Probe** and its **ERM Board**, Keycode, Tissue Model, Installation Software on USB Key
PCEX0007	**DICOM Connectivity** Optional Software to export data to a server in DICOM standard
PCEX0016	**STS** Option to perform sulcus-to-sulcus (STS) exams with the LIN 50MHz Probe (BHF-50LIN).
PCEX0017	**XML Worklist** Option to import patient files in .xml format to the ABSolu database
PCBX0037ABS	**ABSolu Console for connection with 15Mhz (B1), LIN 50Mhz (BHF-50LIN) and Biometry Probes** including 2 Probe Holders, Footswitch, Protective Cover, Mouse Pad, Clinical Echography of the Eye and Orbit Monograph, E-User Manual, E-Quick Start, Power Cord

5.2 Accessories and consumables

Reference	Accessories
PCEX0008	Trolley
RM150292	Probe Holder for B Probes (15Mhz and 20Mhz)
SC010128	Wireless Keyboard (Azerty) including Mouse
SC010129	Wireless Keyboard (Qwerty) including Mouse
SC010047	Finger Grip Sleeve for 15Mhz B Probe
SC010122	Finger Grip Sleeve for 20Mhz Annular Probe
XEAAACOQLIN14	Scleral Shell 14 mm for Linear Probes
XEAAACOQLIN16	Scleral Shell 16 mm for Linear Probes
XEAAACOQLIN18	Scleral Shell 18 mm for Linear Probes
XEAAACOQPRAEG15	Präger Shell 15 mm for Biometry (children)
XEAAACOQPRAEG17	Präger Shell 17 mm for Biometry (adults)
XEAAAPAM	Extension Handle for Biometry Probe
XEAAAPEDALE4RF	Wireless 4-Position footswitch
XEIMPUSBLASER	USB Laser Printer
XEIMPUSBSONY	USB Sony Video Printer

Reference	Consumables
XEAAAGEL	250 ML Gel for echography
XEPRBFEN2	Filmed windows for 2nd Gen 50Mhz Linear Probe (box of 10 pcs)
XEPRBFS	ClearScan for 50MHz Linear Probe - diam. 25 mm (box of 10 pcs)

5.3 Spare parts

Reference	Spare parts
SC010118	S-15-50 MHz ERM board
SC010117	A-15-50 MHz ERM board
SC010101	Potentiometer cable
RE010090	Power supply module (12V)
RE090266	USB key
SC010069	Package screen
SC010107	ERM Board for Annular 2MHz probe
RP160083	HDD 2.5” 1TB for ABSolu
RP160084	SSD card 128GB 2.5” for ABSolu

6. DISASSEMBLE

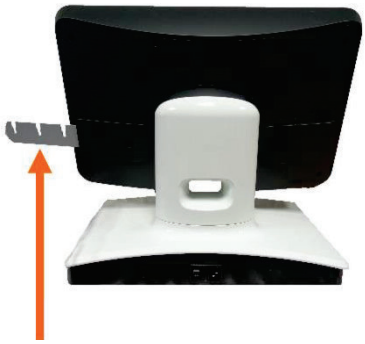
This chapter outlines the procedures to disassemble the ABSolu device.

Before any intervention:

- Turn off the device. The main switch must be toggled to the “0” position.
- Unplug the mains cord located at the back of the unit and remove all connections.

6.1 Remove the back cover

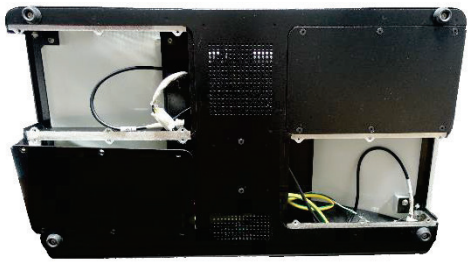
1. Unscrew the probe holders and remove them.



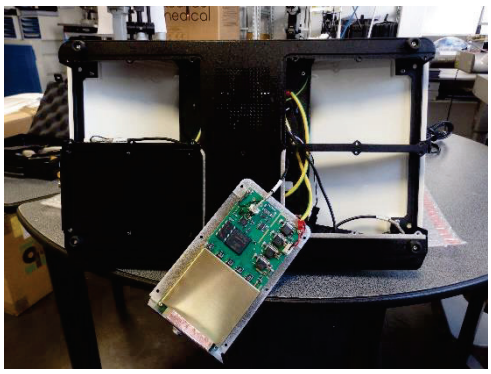
2. Lean the screen backwards, then unscrew the back shell (3 screws) and remove it.

6.2 Access subsystem boards

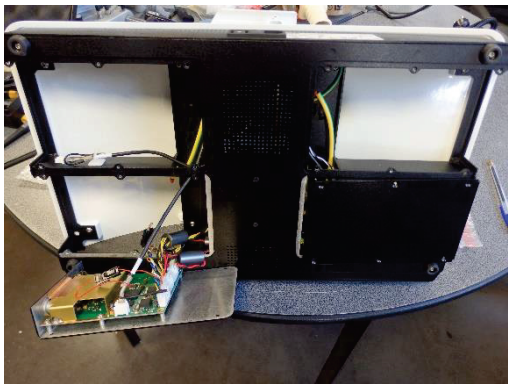
> Unscrew all 24 screws located at the bottom of the unit. Then access the ERM boards.



The 20MHz ERM board is located in the bottom right.

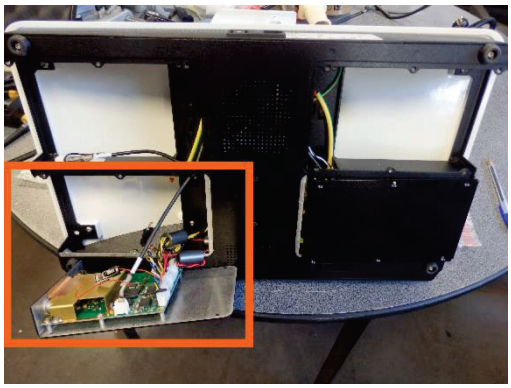


The A-15-50 MHz ERM board or the S-15-50 MHz ERM board is located in the bottom left.

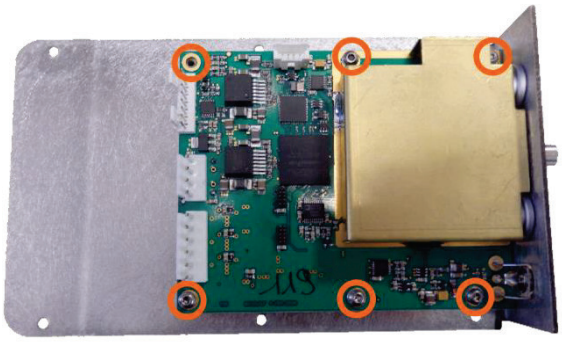


6.3 Replace the A-15-50 ERM board with a S-15-50 ERM board

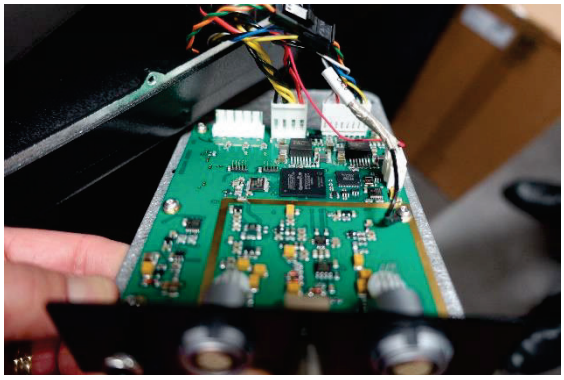
1. Unscrew the bottom left cover.



2. Unplug the A-15-50 ERM board and unscrew the board from the cover.

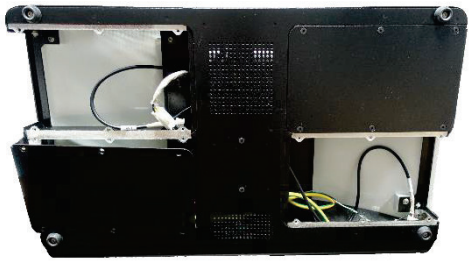


3. Fix the S-15-50 ERM board on the cover and plug it to the unit.



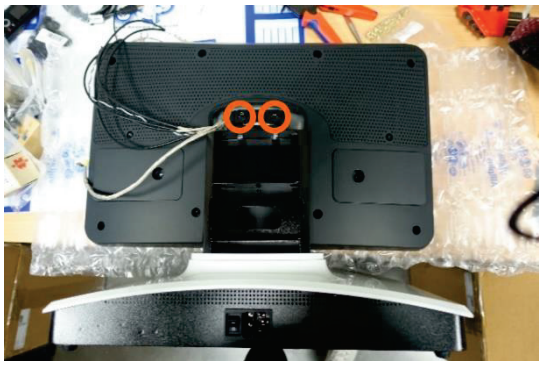
6.4 Remove the screen from the device base

1. Remove all the back and bottom cover of the unit.

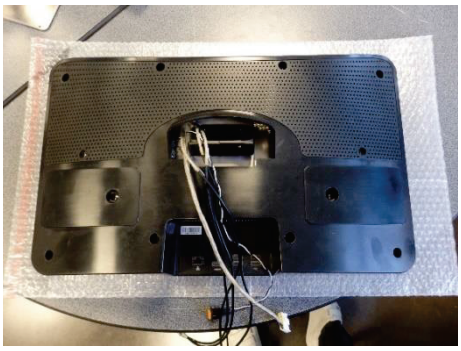


2. Unplug all the cables that connect the screen to the base of the device. It concerns the following cables: CN24, CN25, CN26, power supply cable, ground cable and orange/green switch cable.

3. Unplug them as follows:
   - CN24 from the USB board.
   - CN25 from the 20-5A ERM board.
   - CN26 from the 15-50 ERM board.
   - Take the cables out of the base.
4. Unscrew the 2 screws on the back of the screen.

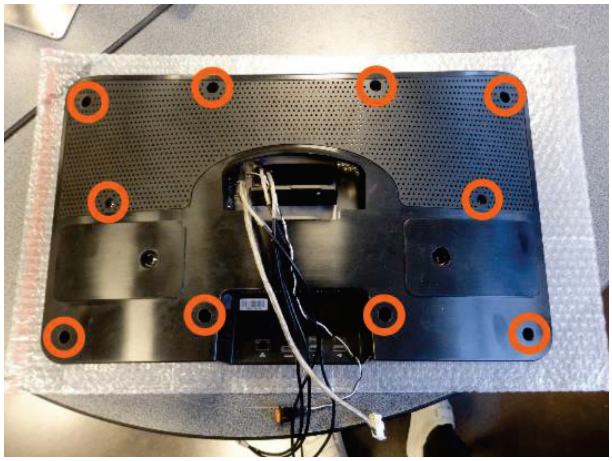


5. Take the screen out of the base.

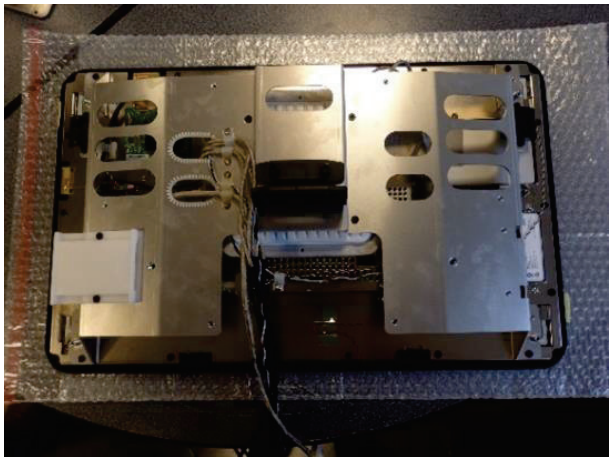


6.5 Open the screen

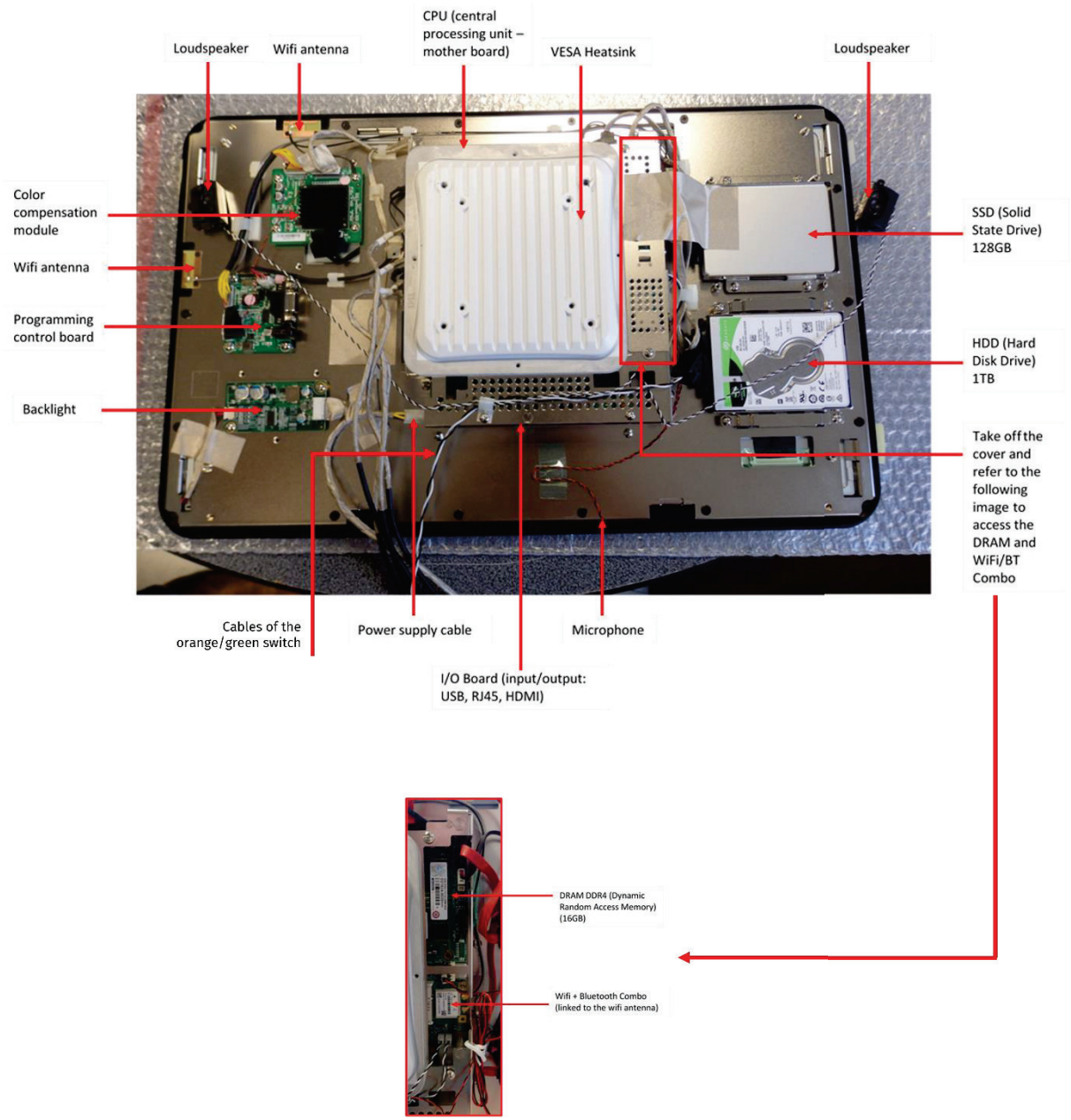
1. Unscrew the 10 screws and remove the back cover.



2. Remove the metal frame and unscrew the loudspeaker. Then access the hard drive and the boards.



Internal screen components are referenced in the image below.

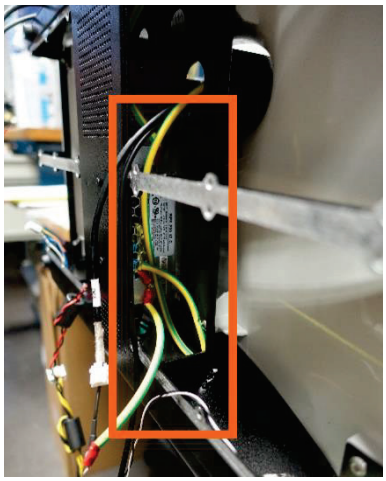


6.6 Remove the power supply

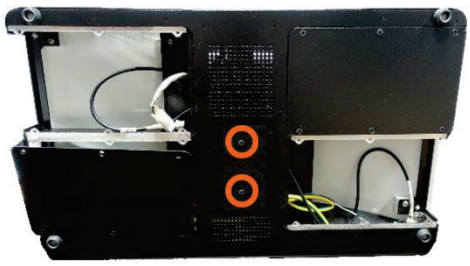
1. Unscrew all 24 screws located at the bottom of the unit and remove all the covers. The power supply is located under the frame.

2. Unscrew all 8 screws that maintain the white cover (in each angle and border length) and lift it.

3. Unplug all the cables that are connected to the power supply.



4. Unscrew both screws on the frame. Then remove the power supply.

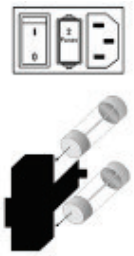


6.7 Replace a fuse

WARNING
Before replacing a fuse:

- Disconnect the power supply before cleaning the unit case.
- Only use a damp cloth for cleaning the unit. Do not use any solvent or alcohol.
- Disconnect the power cord before any intervention on the unit.

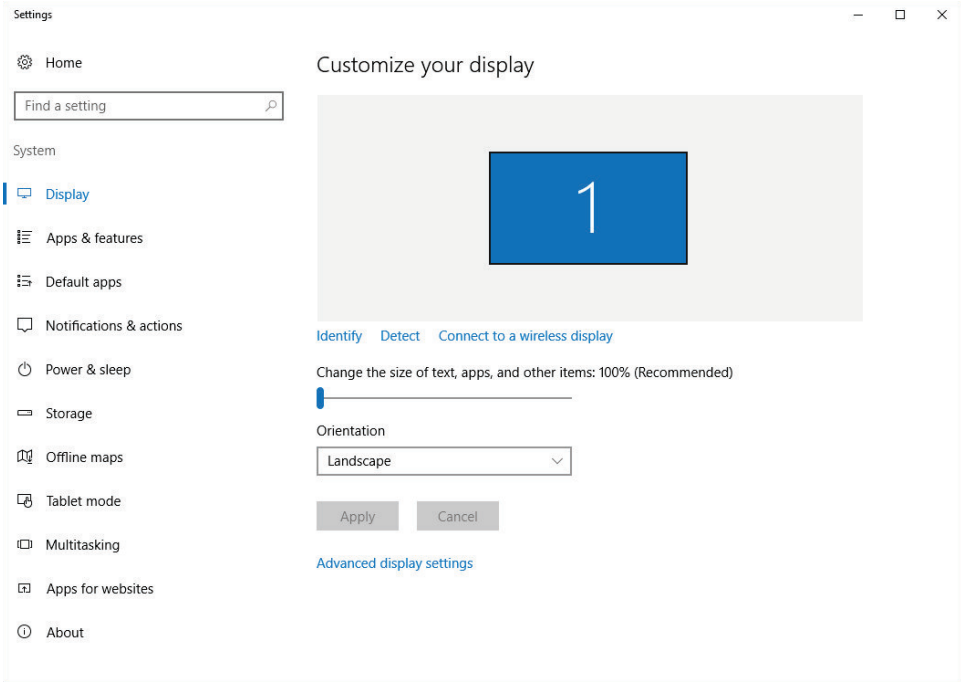
Fuse specifications:



- 2 glass fuses in the holder.
- 5 AT.
- Pdc: 50A 250VAC.
- 5 x 20mm.

7. DEVICE DISPLAY

To ensure that the text in the ABSolu screen is not truncated, adjust the magnifier tool parameter as shown below. Then select **Apply**.



8. PROBES MANAGEMENT AND CALIBRATION

8.1 Standardized (A-Std) / regular biometry (A) probe

Anytime a standardized or regular biometry probe is replaced or changed, the calibration must be checked and/or adjusted.

8.1.1 Standardized/regular biometry probe parameters

Each probe has specific parameters. The list of already installed probes parameters is displayed in the **Probe Settings** menu of the General Setup screen.

This list should correspond to the serial numbers of the probes currently in use on the unit.

8.1.2 Delete a standardized or regular biometry probe

To delete a probe:

- Right click on the probe and select **Delete**.

Or

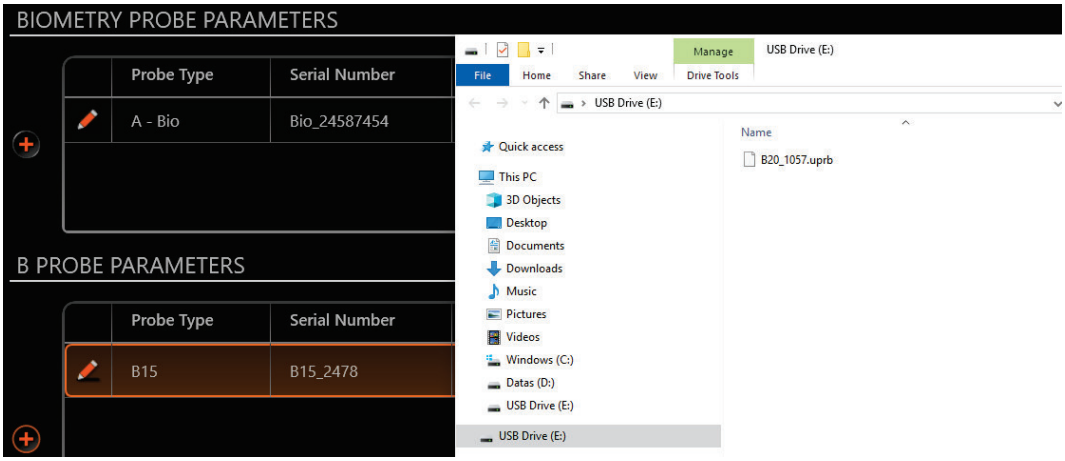
- Select the probe and press the **Delete** key on the keyboard.

8.1.3 Install a standardized or regular biometry probe

WARNING
The serial numbers of the listed probes should correspond (and only correspond) to the serial numbers of the probes currently connected or used on the unit!

WARNING
Two probes of the same type cannot be displayed in the list. The probe not currently in use on the unit has to be removed from the list.

1. Connect the flash drive delivered with the probe, into the USB port.
2. Click on the **Add** (**+**) icon. The following dialog box is displayed.



3. Select the file, and its serial number, to install and click **Open**. The new probe is added to the list.

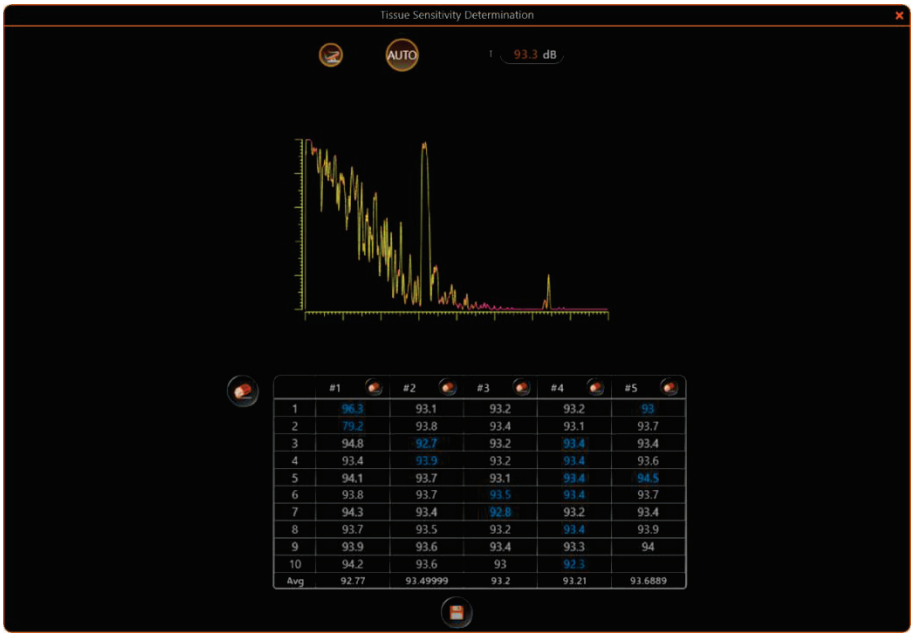
8.1.4 Determine tissue sensitivity for A-Std probes in S mode

NOTE
The Tissue Sensitivity has to be determined for the whole system: ABSolu unit and A-Standardized probe (using the tissue model). Another probe with the same ABSolu unit may have a different T Gain.

1. Select the **A-Std** probe. Then click the **Tissue Sensitivity Determination** icon:

2. Put a drop of water on the A-Std probe, then place it on the tissue model. The calculation proceeds.

   The following screen is displayed.



3. Choose how to start automatic calculation:
   - Press the footswitch and the spacebar on the keyboard.

   Or
   - Click the **AUTO** icon.

   The Tissue Sensitivity is then calculated in the Avg (average) case. The average value must be between 75dB and 100dB.
4. When calculation completed, save the values.

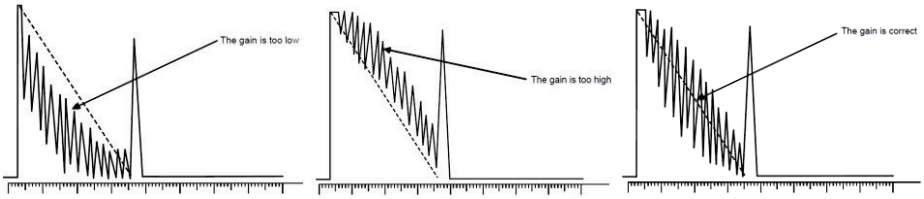
AUTO MODE

After placing a drop of water on the surface of the tissue model, the probe must be positioned vertically on top of the tissue model. These steps are indicated on the screen. The procedure involves these phases:

- After 10 measurements, the automatic acquisition is stopped.
- The measurements average is calculated and displayed at the bottom of the result table. This procedure can be done five times (five columns).
- The T gain value is the average of all measured values and is displayed on the left side of the screen (T).
- At the end of the procedure, automatic Tissue Sensitivity Determination must be saved or can be cancelled in order to start new measurements.

MANUAL MODE

In manual mode, the gain must be adjusted by adding the value numerically in order to obtain a “linear” decrease.



> When the correct gain is found, click the **Save** icon. It will then be used as the T reference. The **Tissue Sensitivity Determination** window is closed automatically, and the Physician screen appears.

8.1.5 Test block for regular biometry probe calibration

WARNING

The calibration process is the same for the “regular” type of biometry probe and ProBeam probe (biometry probe for a laser-aiming beam).

The Test-Block is located on the probe holder on the side of the unit. It is a plastic block used to test and calibrate the scan measurements. The test block has an equivalent thickness of 10 mm at a velocity of 1550 m/s.

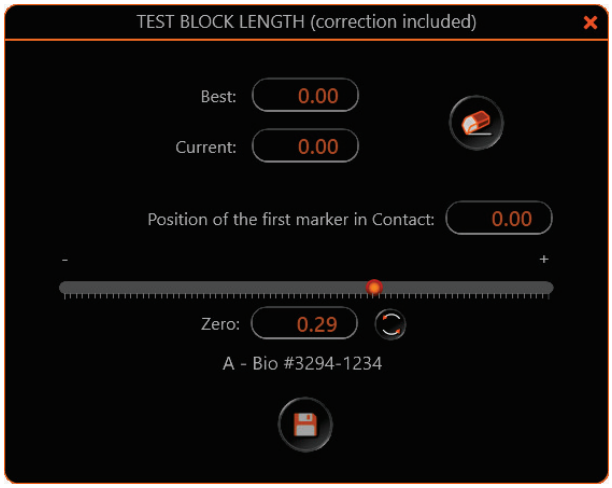
The test block used with the ABSolu has a rounded convex shape to match the concave shape of the “regular” biometry probe’s tip.

> Put a drop of water on the Test-Block and position the probe on it to be as much perpendicular and well centered as possible.

A tracking starts. The purpose is to record the measurement with the highest posterior face echo. This measurement will correspond to the best probe position, well perpendicular to the posterior face.

8.1.5.1 Test block length in Setup mode

When using **QM.Absolu.Presentation.Main.Setup**, the **Test Block Length** dialog box appears.



Two values are displayed:

1. **Best** is the measurement corresponding to the best image.
2. **Current** is the measurement corresponding to the current position of the probe.

For a good calibration, the probe should measure a thickness that lies between 10.00 and 10.11mm. If the measurement is not within these ranges (best and current, especially best), the **Position of marker #1 in Contact** cursor should be adjusted.

Use these icon options:

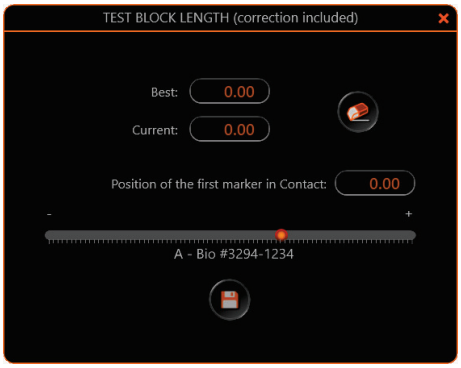
 Save the calibration.

 Clear the **Best** and **Current** fields and start a new measurement.

 Reset the **Zero** value.

8.1.5.2 *Test Block Length in normal mode*

When using **QM.Absolu.Presentation.Main**, the **Test Block Length** dialog box appears.



Two values are displayed:

1. **Best** is the measurement corresponding to the best image.
2. **Current** is the measurement corresponding to the current position of the probe.

For a good calibration, the probe should measure a thickness that lies between 10.00 and 10.11mm. If the measurement is not within these range (best and current, especially best), the **Position of marker #1 in Contact** cursor should be adjusted.

Use these icon options:

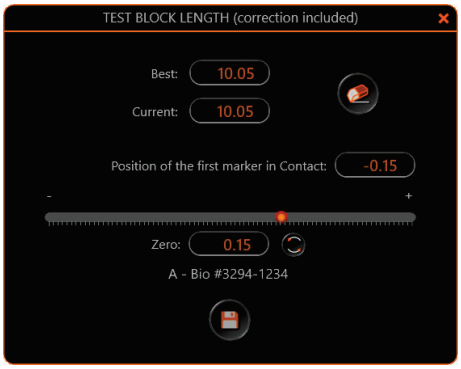
 Save the calibration.

 Clear the **Best** and **Current** fields and start a new measurement.

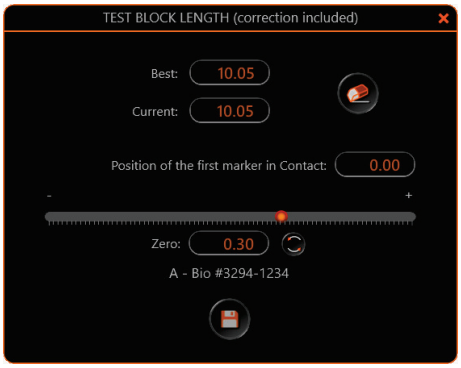
8.1.6 "TEST Block"

The Zero (Probe) field at the bottom of the TEST Block window allows the user to reset the **Position of marker #1 in Contact** to zero as shown below. When the application is launched in normal mode, the Correction appears to be "0" with the correct probe calibration.

EXAMPLE
After biometry probe calibration, the TEST Block Length measurement is correct when the Correction for the Position of marker #1 in Contact is -0.30mm:



Entering 0.30 in the Zero (Probe) field allows the user to reset the Position of marker #1 in Contact to 0mm:



8.1.7 Set up the zero value for calibration

Follow the procedure below to set the zero value. Also refer to the “A-Probe calibration” in installation notice **NI00029**.

WARNINGS
Before starting the procedure, consider these warnings::

- In case the measured test block thickness is incorrect, the calibration procedure has to be re-done as explained in the user manual. See also **ABSolu User Manual - Chapter V – General Setup & Maintenance** - Section 1.6 - Probe Settings.
- It is recommended to read to General Warnings and Cautions information **ABSolu User Manual – Chapter I – Regulatory & Safety information**.
- If the Biometry and ProBeam probes are in use on the ABSolu unit, first perform the calibration for both probes. The calibration must match with the connected probe. When performing an exam, ensure to select the appropriate probe in the Biometry screen.

NOTE
When Axial length is activated and the A-Std probe is used for measurements and IOL calculation, the **Axial length** mode method should be selected.

In Axial length, only the immersion technique is available. This correction impacts the Anterior Chamber depth measurement when the acquisition is done using the Contact technique. When using the Immersion technique, the first marker is set on the corneal echo, far from the emission spike.

To set up the Zero value:

1. Launch the software using the **QM.Absolu.Presentation.Main.Setup** shortcut located under **C:\Quantel\Absolu**.
2. On top of the left screen, click the **General Setup** icon. Then select **6-Probe Settings** and choose the type of A probe (Biometry or ProBeam).
3. Click the **Test Block** icon.
4. Click the **Zero** field (probe) and enter the recommended value *Zero:*.
5. Adjust the **Position of marker #1 in Contact** cursor to display 0.00.
6. Check that the thickness measurement on the rounded shape test block is comprised between 10.00 et 10.11mm.
7. Save changes.

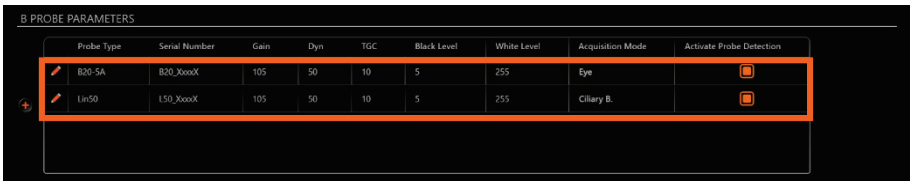
The ABSolu is now configured, and the new Biometry probe is ready for use.

8.2 15MHz, 20MHz-5A, LIN 50MHz probes

Each probe listed hereafter has different parameters:

- 15MHz Probe (B1).
- 20MHz-5A Probe (B20-5A).
- LIN 50MHz Probe (BHF-50LIN).

The list of already installed probes parameters is displayed in the probe setup screen as shown below.



This list should correspond to the serial numbers of the probes currently in use on the unit.

8.2.1 Delete a B1, B20-5A or BHF-50LIN probe

To delete a probe:

- Right click on the probe and select **Delete**.

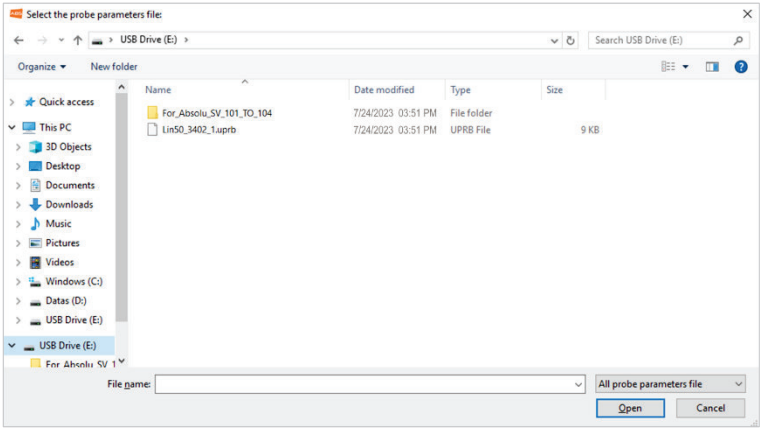
Or

- Select the probe and press the **Delete** key.

8.2.2 Install a B1, B20-5A or BHF-50LIN probe

WARNING
Two probes of the same type cannot be installed. In case the LIN 50MHz type of probe is used, follow the calibration checking procedure (before using the probe) as explained in **Perform linear probe calibration check**.

1. Connect the flash drive delivered with the probe, into the USB port.
2. Click on the **Add (+)** icon. The following dialog box is displayed.



3. Select the file, and its serial number, to install and click **Open**. The new probe is added to the list.

8.3 Perform linear probe calibration check

WARNING
To use the probe for sizing, QUANTEL MEDICAL recommends checking systematically the probe calibration.

8.3.1 Calibration tool for linear probes

Each probe is delivered with a calibration tool that has been checked against a master tool. The probe type is engraved on the side of the tool (LIN50). A label indicates the distance (D) between the pins.

The distance between the two metallic pins inside the tool are used for calibration.

8.3.2 Set up the calibration for a linear probe

Linear probe calibration involves the following stages:

1. Equipment:
   - 1 calibration tool corresponding to the probe type.
   - Demineralized water at temperature between 20°C and 25°C.
2. Calibration:
   Ensure to stop the probe scanning motion while setting up the calibration procedure (freeze the image using the footswitch).
3. Prepare LIN 50MHz probe:

CAUTION
Place the removable window on the probe.

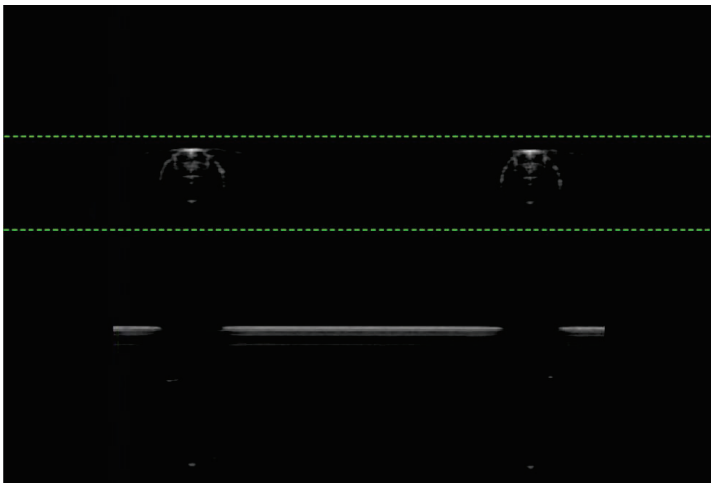
- Fill up the calibration tool with demineralized water.
- Position the probe on the calibration tool.

NOTE
Immerse the probe up to 1.5 cm from the acoustic window. If a scleral shell is used, immerse up to 4 cm from the acoustic window.

The probe is now ready to be checked. Perform the checking procedure as described in the following section.

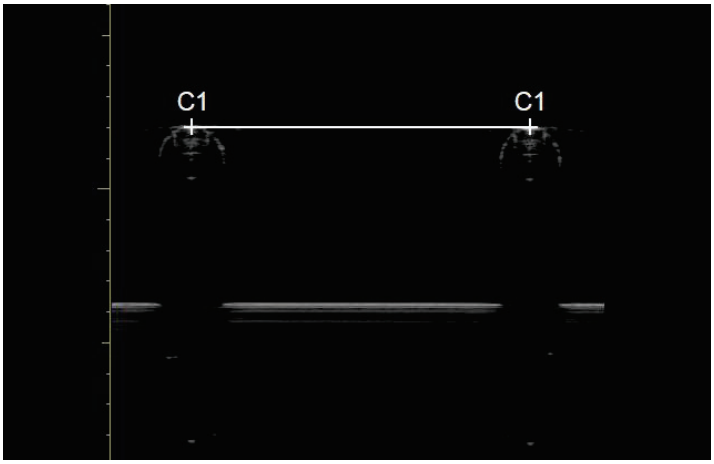
8.3.3 Perform the linear probe calibration

1. Switch on the unit.
2. Select **Lin 50**, then select **Patient** and **New Session**.
3. Press the footswitch to activate the probe's motion. The following image is displayed.



4. Adjust the gain to obtain a clear and precise image quality.
5. Press the footswitch to freeze the image.

6. Place calipers (see Figure). C1 is the measure of the distance between the calibration tool pins.



7. Check the C1 measurement result. This should correspond to the D value (with its tolerance) indicated on the label on the side of the calibration tool.

LIN50
D= 11mm (± 0,06mm)

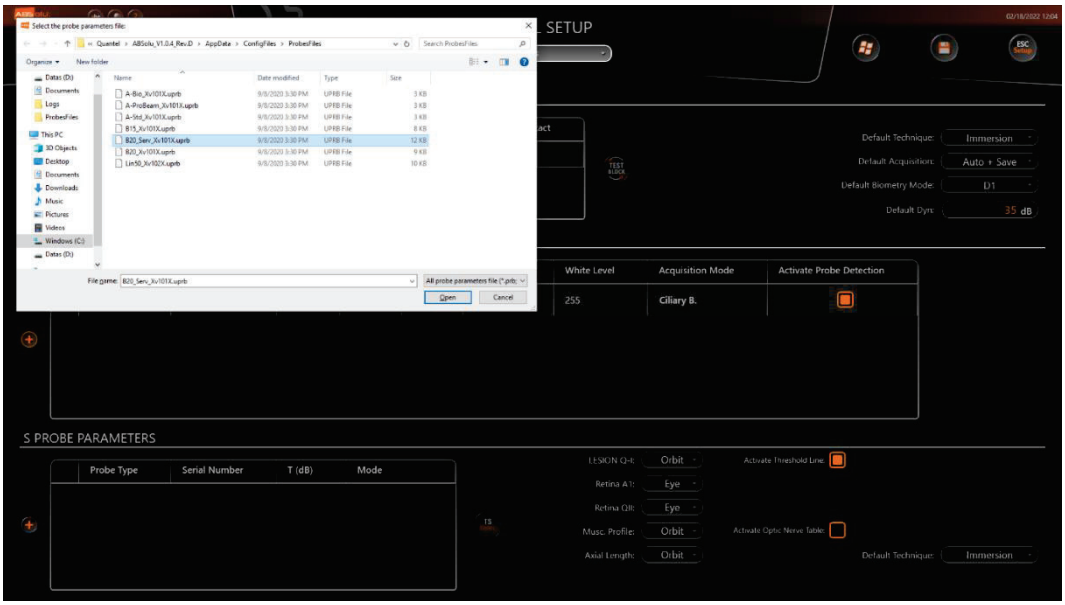
i.e., 10,94mm < D < 11,06mm

WARNING
In case the measurement result is out of range: the probe can be used for diagnosis only BUT NOT for sizing. Contact the local distributor or the QUANTEL MEDICAL Service Department.

8.4 Check rings images (B20-5A probe only)

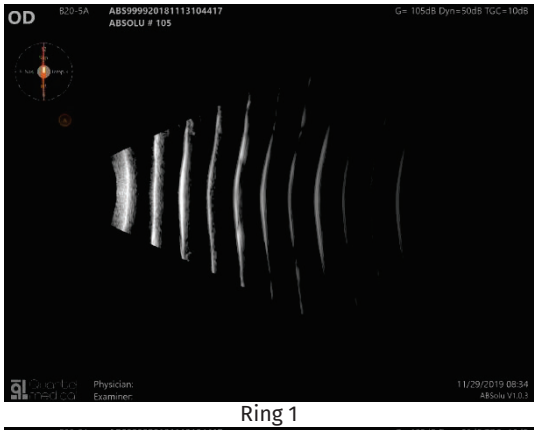
1. Delete the B20-5A probe parameters installed on the ABSolu Software: right-click on the line and select **Delete**.

2. Install **B20_Serv.uprb** located in **C:\Quantel\ABSolu\AppData\ConfigFiles\ProbesFiles**.



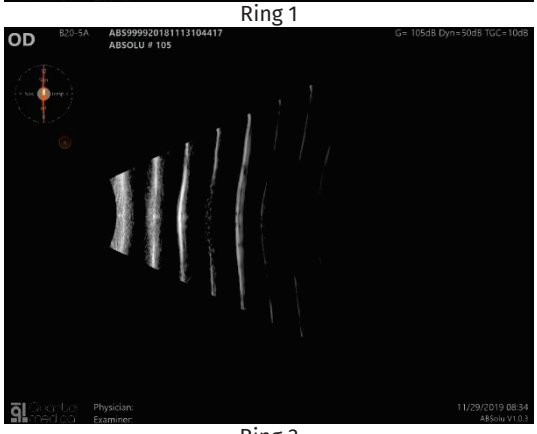
3. Start an exam and check all the different rings in the scroll-down menu.

The image must correspond to the ones below.

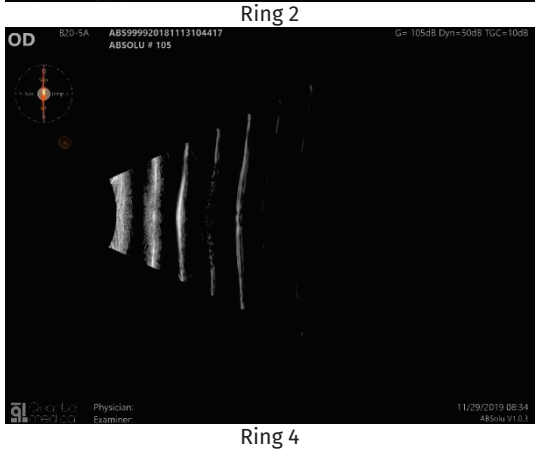


Ring 1

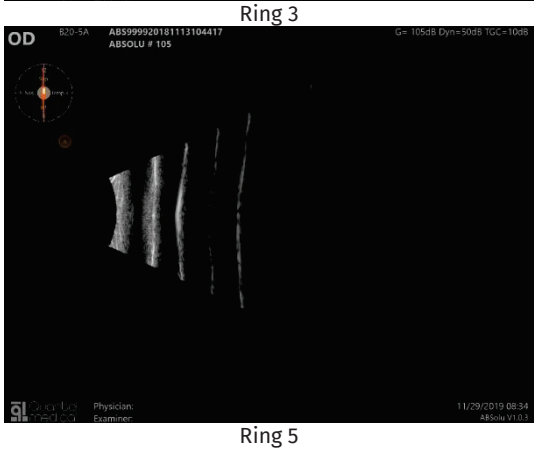
Ring 2



Ring 3



Ring 4



Ring 5

4. When the check is complete, delete the B20-5A service probe.

5. Reinstall the B20-5A probe parameters. These are available in **C:\Quantel\ABSolu\AppData\ProbeFile**.

WARNING
Check that the B20-5A probe serial number in the software is the same as the one mentioned on the probe label. If not, the measures can be wrong.

8.5 Solve noise problems with B and linear probes

Noise may be reduced when using the probes. This section explains how to check and simulate the noise level is correct for examination.

NOTE
The ABSolu tolerance should display 5dB as maximum noise; it means that when the image is displayed on the screen at 105dB, the noise must be very low.

FOR LINEAR PROBES:

- Prepare the probe (as for an exam): fill the probe with demineralized water and install the removable window.
- Put the removable membrane in contact with the hand.

To check and simulate noise level:

Start the probe and check if the noise is increased or not when the probe is in contact with the hand. If the noise is increased, it will be present during patient examination. In this case, follow these steps to investigate the elements producing noise.

1. Check the room grounding is correct, (the earth impedance has to be lower than 0.1 ohms).
2. Try to connect the unit on another plug in the room or try to change the room if the problem persists.
3. Check that the probe cable is not in contact with:
   - The unit power supply module.
   - The unit screen.
   - The printer USB cable.
4. Check the probe cable is straight (not entangled).
5. Try to switch off the light, air-conditioned system, phone... (in the room or in another room).
6. Check that the other units installed nearby the unit do not generate noise. If this is the case, switch off this unit when using the probe.
7. Check the noise impact of any other peripheral connected to the unit (e.g., a printer).
8. Check that the unit is not connected to the network: disconnect the RJ-45 cable and check the image again.
9. Check that the mouse, the keyboard, and the dongle do not interfere with the device (unplug them).

8.6 Probes care

Follow these steps to store linear probes (LIN 50MHz) correctly:

1. Remove and throw away the white removable window.
2. Drain out the water from the probe.
3. Place the black cap back on the probe aperture to avoid dust penetration.
4. Store the probe inside its box.

9. DATABASE MANAGEMENT

9.1 Data information

Database:
The database information is stored in these folders in **D:\Quantel**:

- **ABSolu** includes the AVI, EMR, JPEG, PDF, Hotline folders,
- **Dicom** includes the DICOM file, if the DICOM is not activated, this file will not be present.
- **Documentation** includes the documentation files, which are available in the "?" menu,
- **Exams** includes the images and Cineloop, present in the Exam screen of the patient files,
- **Official Document** includes the reports and drafts present in the patient files.

The database cannot be manually copied.

Data:
Exported data (such as JPEG, PDF...) are located by default under **D:\ABSolu**. However, this location can be customized by the Physician (**9-Export Settings** menu in the General Setup screen).
This directory contains the following folders:

- **Cineloop** contains all exported exams in AVI format,
- **EMR** contains all exported exams in EMR format (JPEG + xml files),
- **JPEG** contains all exported exams in JPEG format,
- **PDF** contains all exported exams in PDF format.
- **Hotline** contains ell exported files for service.

9.2 Back up the database

9.2.1 Back up the database without data

To save the database, launch **Export_QM_Base.bat** located in **C:\QM_tools**.

When the database backup is completed, **Absolu_export.bat** is created close to **Export_QM_Base.bat**.

NOTE
In this case, only the database is saved: Images / IOL / Cineloop / Reports. Draft and official documents are not saved. To copy all data, refer to **Back up the database and its data**.

9.2.2 Back up data only

> To back up on data only (e.g., images, Cineloop etc.), copy the **ABSolu** and **Quantel** folders in **D** drive.

9.2.3 Back up the database and its data

Make a backup of all data:

- Automatically when clicking the **Backup** icon:

- Before performing an automatic backup, launch the Cobian software. See also **Use Cobian Application**.
- Manually when following the procedures in **Back up the database without data** and **Back up data only**.

NOTE
Consider the following aspects of using Cobian software for database management:

- The backup icon indirectly uses the Cobian software. Be careful to program Cobian before using it.
- The use of Cobian software can be more time consuming than a manual backup.
- Two ABSolu devices cannot have the same database. Each device has its own and unique database in **C** drive.

9.3 Database Factory

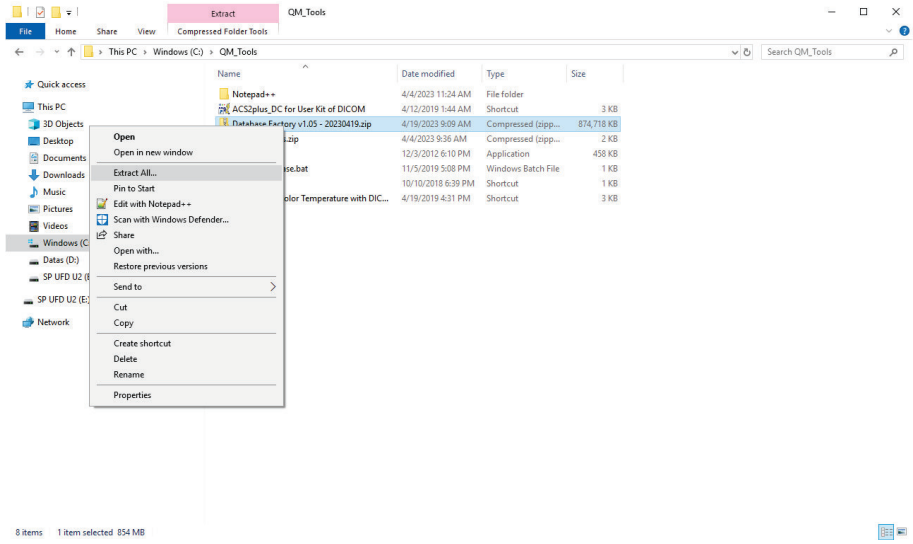
WARNING
The Database Factory installation will definitively reset all data of the ABSolu software, and it will be impossible to reinstall them. Probe parameters will also be uninstalled. It will not be possible to make an exam without installing new probe parameters. If necessary, make a copy of all data. See also **Back up the database and its data**.

Before installing Database Factory:

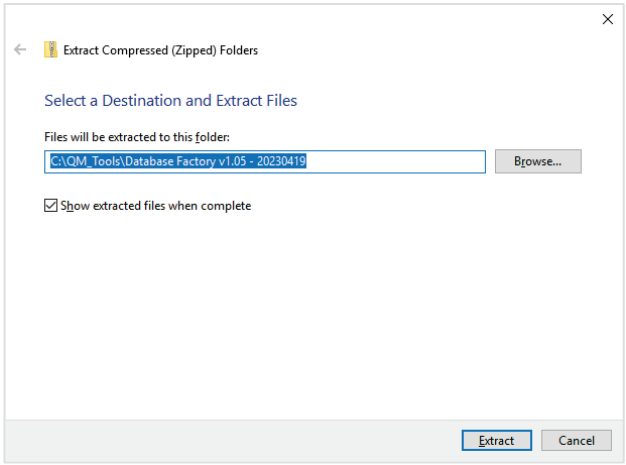
- Ensure that the probe parameters are present in **C:\Quantel\Absolu\AppData\ProbeFile**. They must correspond to the probes connected to the device. If the parameters are not present, please contact the Service Department of QUANTEL MEDICAL. Copy all probe parameters in order to reinstall them if it is necessary.
- The **Database Factory v1.05 - 20230419.zip** database is only compatible with software version 1.0.5. For instance, if software version 1.01 is currently installed, then first update to version 1.02, then V1.03, V1.0.4 and finally V.1.0.5.

9.3.1 Install Database Factory

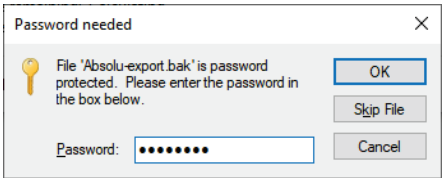
1. Press **Alt**+**F4** to close the application. Verify in Windows Task Manager that it is no longer running in the background.
2. Copy **Database Factory v1.05 - 20230419.zip** in **C:\QM Tools**.
3. Right-click the .zip file and select **Extract All...**.
   The following window is displayed.



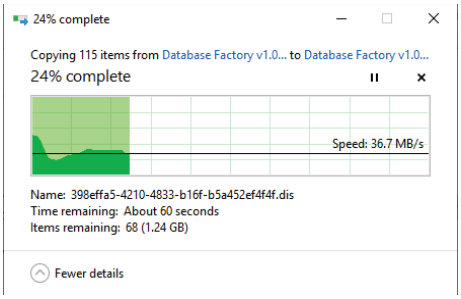
4. Click on **Extract**.



5. Enter the password **EKOAdmin**.

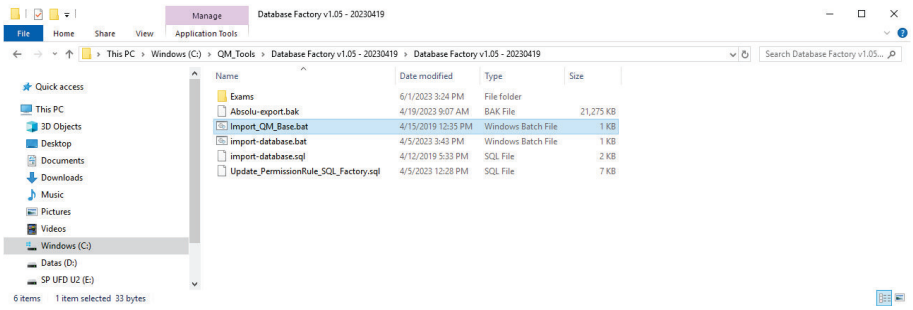


6. Click **OK**. The **Database Factory v1.05 - 20230419** folder is created in **C:\QM Tools**.

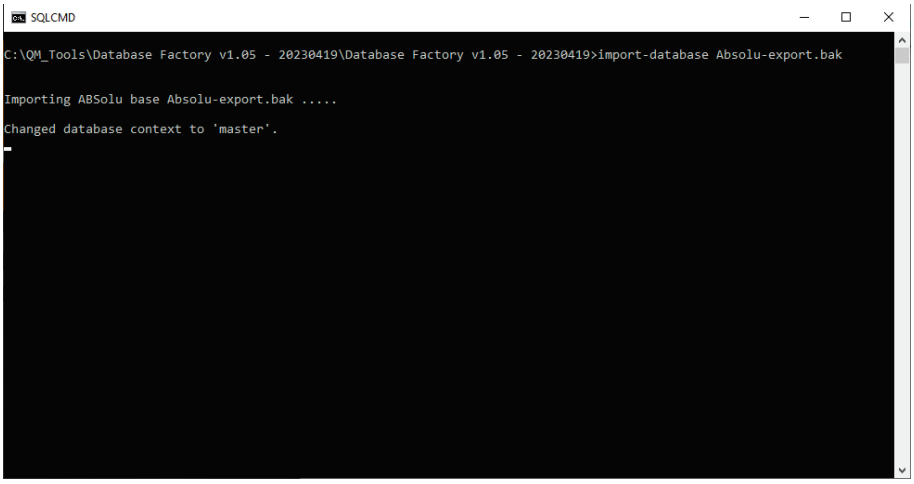


WARNING
The next step will definitely delete all data.

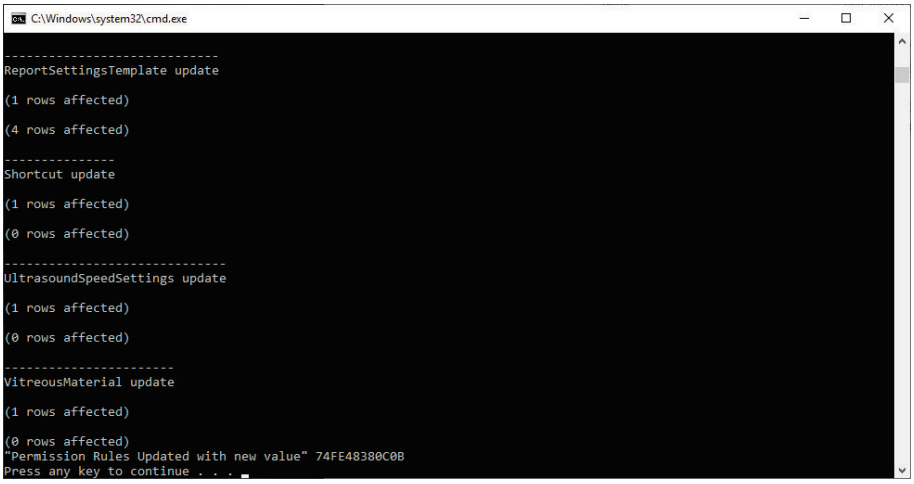
7. In **C:\QM Tools\ Database Factory v1.05 - 20230419\ Database Factory v1.05 - 20230419**, launch **Import_QM_Base.bat**. This process will enable to install the factory base in the ABSolu software.



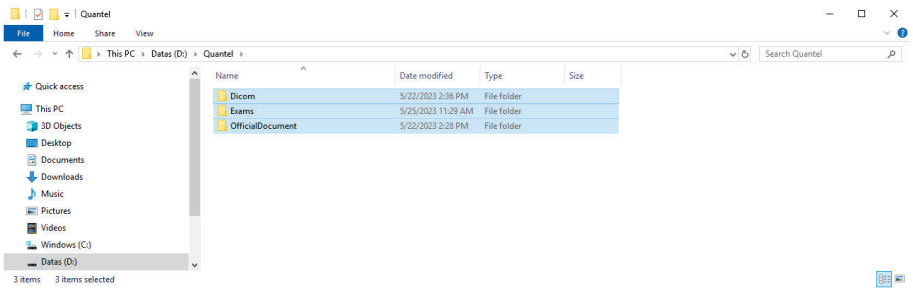
The following window appears.



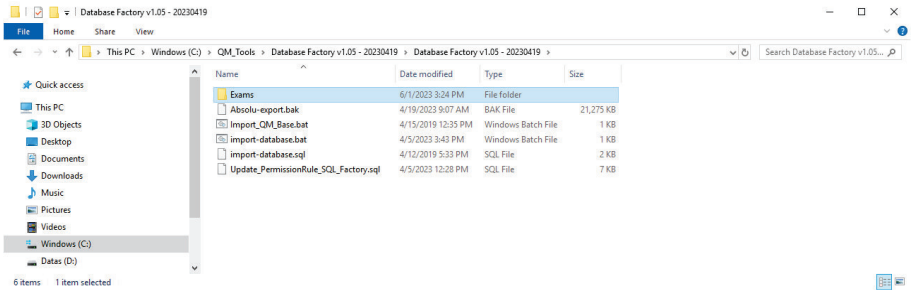
8. When **Press any key to continue...** message is displayed, the procedure is complete. Press a key on the keyboard. Data of the database has been definitively deleted.



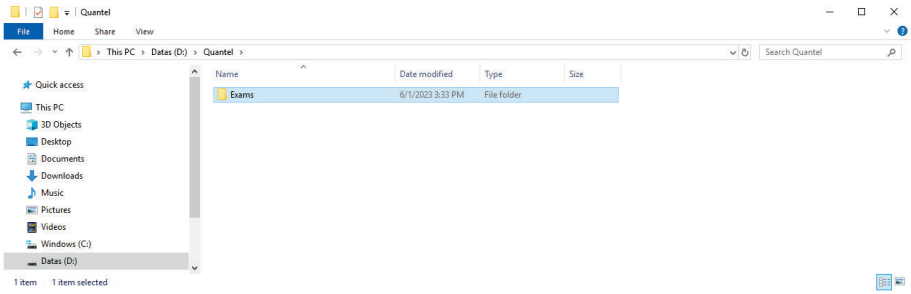
9. In **C:\QM Tools**, delete **Database Factory v1.05 - 20230419.zip**. This action will avoid that the database is deleted by untrained users.
10. Delete these folders in **D:\Quantel**:
    - Dicom.
    - Exams.
    - OfficialDocument.



11. In **C:\QM Tools\ Database Factory v1.05 - 20230419\ Database Factory v1.05 - 20230419**, copy the **Exams** folder.



12. Paste it in **D:\Quantel**.



13. In **D:\ABSolu**, delete the files in these folders: **AVI**, **EMR**, **Hotline**, **JPEG** and **PDF**. Do not delete the folders.
14. Launch the application.
15. In the General Setup screen, select the **Probe Settings** tab.
16. Install the probes.
17. Check that the QUANTEL MEDICAL demo images are present in the patient file called **ABSolu#**.

9.3.2 Calibrate A-Bio and A-ProBeam probes after Database Factory install

After installing the A-Bio and / or A-ProBeam and / or A-Std probes in the unit, these ones have to be calibrated:

- Perform the A-Bio / A-ProBeam probe calibration in the **Probe Settings** menu of the General Setup screen. refer to **ABSolu User Manual – Chapter V – General Setup & Maintenance** - Section 1.6 – Probe settings.
- Perform the Tissue Sensitivity Determination of the A-Std probe in the **Probe Settings** menu of the General Setup screen. Refer to **ABSolu User Manual – Chapter V – General Setup & Maintenance** - Section 1.6 – Probe settings.

If the axial length option was used, make sure to activate it when updating the software.

General information:

- The documentation will still be present in the **?** of the ABSolu software if the **Documentation** folder has not been deleted in **D:\Quantel**.
- When installing the database factory, the **Keycode** remains activated.
- QUANTEL MEDICAL recommends installing new reports (contents, header and footers including the V.1.12 version). These are in **C:\Quantel\ABSolu\AppData\Reports**.

9.4 Database transfer

9.4.1 Back up the Master

WARNING
Carefully read these warnings before backup:

- By default, exported files (**AVI**, **JPEG**, **EMR**, **PDF**, **Hotline** files), which are located in **D:\ABSolu** of the **Master ABSolu**, are not automatically saved by clicking the **Backup** icon. If these files should be transferred to the **Destination ABSolu**, they must be saved manually.
- If there are no flash drives for each probe, make a copy of all probe parameters in order to reinstall them. Check that the probe serial numbers, and the parameters numbers are identical.

NOTE
It is not recommended to extract the files on the desktop of the **Destination ABSolu**, because the space on the disk will be too low. Extract the files on **D** drive or an external storage.

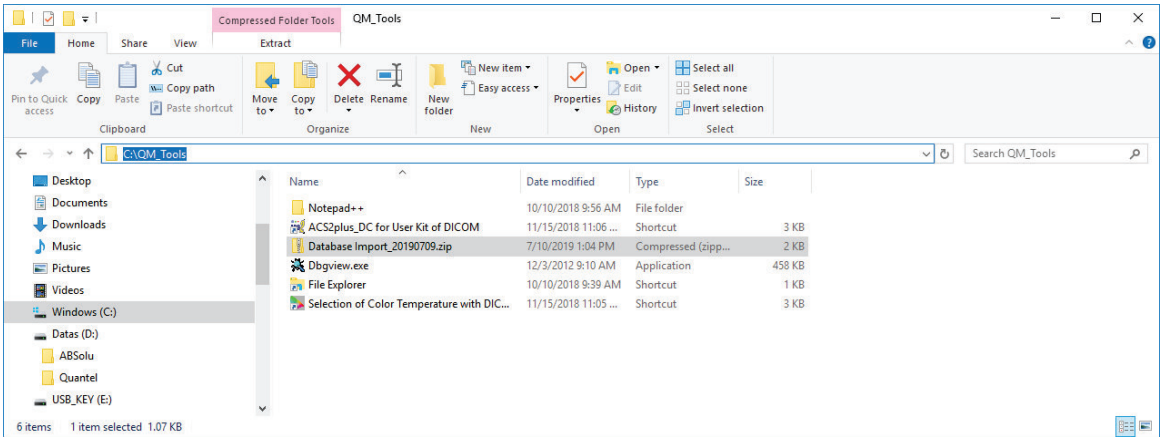
1. Launch the application (minimum V1.0.4) on the **Master ABSolu** unit.
2. Select **General Setup**.
3. Click the **Backup** icon.
4. Select a folder on an external disk (the procedure may take several minutes).
5. Unzip the backup file (in this example **Quantel 2019-07-09 12;25;12 (Full).zip**) in the external hard disk or in **D** drive of the **Destination ABSolu** unit.

9.4.2 Install Master database in the Destination unit

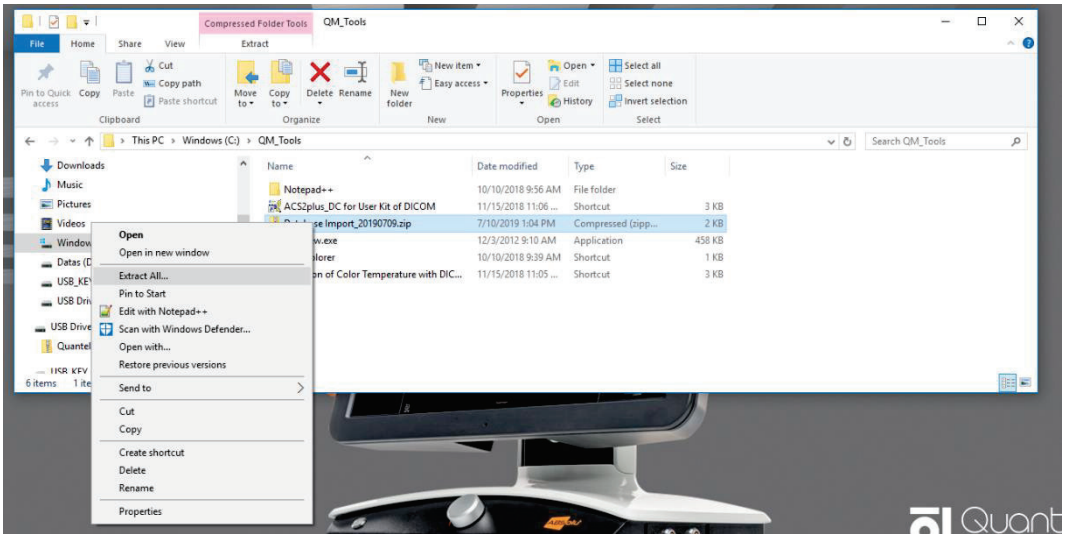
To import the Master database in the Destination ABSolu software, use **Database import_20190709.zip**.

Perform these steps to install the database:

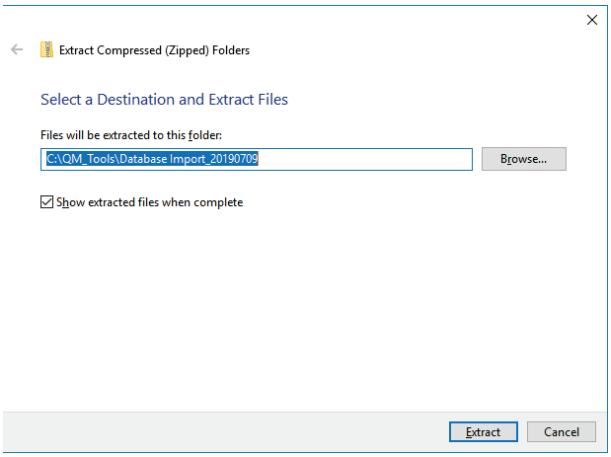
1. Press **Alt+F4** to close the application and verify that it is no longer running in the background.
2. Copy **Database import_20190709.zip** in **C:\QM Tools** of the Destination unit.



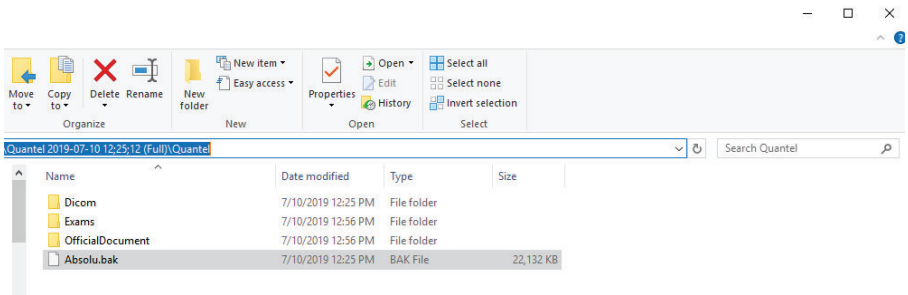
3. Unzip **Database import_20190709.zip**. Right click on the file and select **Extract All...**.



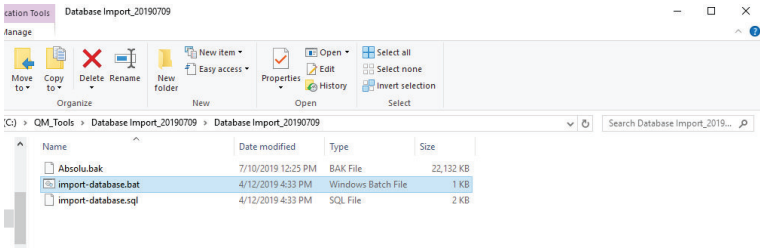
The following window is displayed.



4. Click **Extract**.
   Database import_20190709 is created in **C:\QM Tools** of the Destination unit.
5. In **Quantel 2019-07-09 12;25;12 (Full)\Quantel**, copy **Absolu.bak** of the Master.

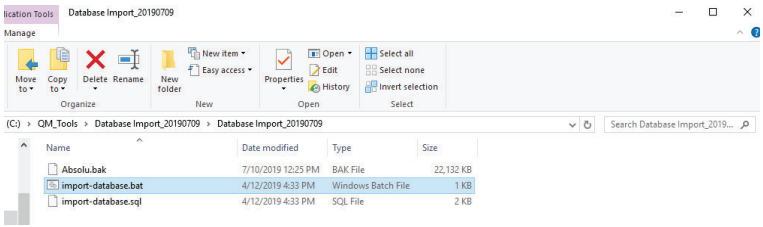


6. Paste **Absolu.bak** in **C:\QM Tools\Database Import_20190709\Database Import_20190709** of the Destination unit. Make sure that there is sufficient space on **C** drive.

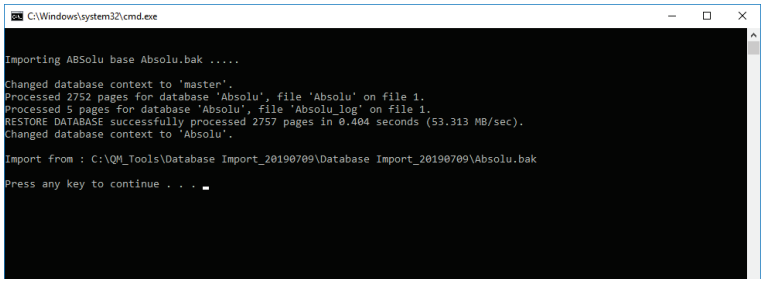


WARNING
The next action will definitively delete all data.

7. Launch the **import_database.bat** software, which is located in **C:\QM Tools\Database Import_20190709\Database Import_20190709**.



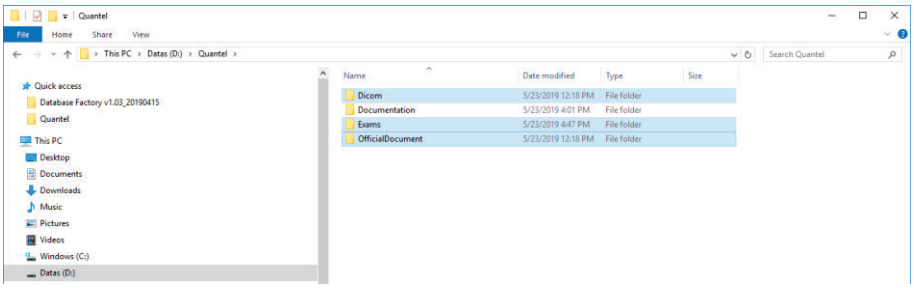
The following window appears.



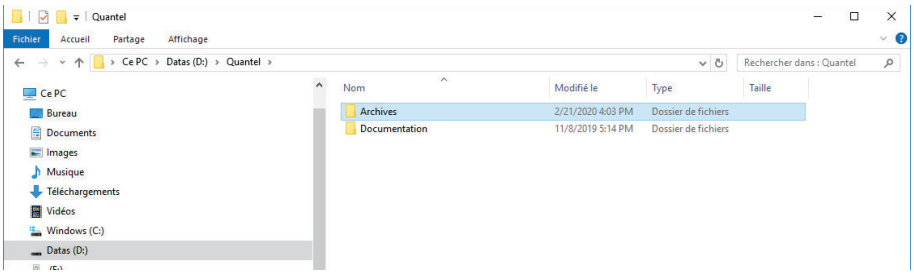
8. When **Press any key to continue...** message is displayed, the procedure is completed (press a key on the keyboard).
Data of the Destination unit has been definitively replaced by the Master database.

WARNING
Delete the **Database import_20190709** folder and the zip file. They are in the directory of the Destination ABSolu. This action will avoid that database is deleted by untrained people.

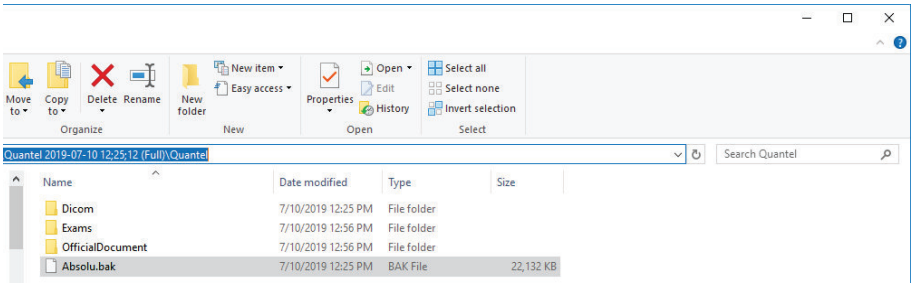
9. Cut these folders located in **D:\Quantel** on the Destination unit:
   - Dicom.
   - Exams.
   - OfficialDocument.



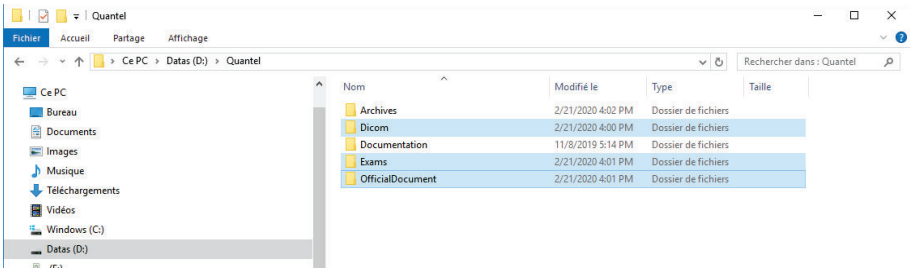
10. Paste them in a new folder called **Archives** on the Destination unit.



11. In **Quantel 2019-07-09 12;25;12 (Full)**, copy the **Dicom**, **Exams** and **OfficialDocument** folders.



12. Paste them in **D:\Quantel** on the Destination unit.



NOTE
If the **AVI**, **EMR**, **Hotline**, **JPEG** and **PDF** folders of the Master ABSolu have been saved previously, paste them in the Destination unit. By default, they are located in the ABSolu folder on **D** drive.

13. Launch the application.

14. If the connected probes do not correspond to the one installed.
    - Select the General Setup screen, then click the **Probe Settings** tab.
    - Install the probe parameters.
15. Check that the Users, Patients, images, and official documents are present in the application.

9.4.3 Calibrate A-Bio and A-ProBeam probes after database transfer

After installing the A-Bio and / or A-ProBeam and / or A-Std probes in the unit, these ones have to be calibrated.

- Perform the A-Bio / A-ProBeam probe calibration in the **Probe Settings** menu of the General Setup screen. Refer to **ABSolu User Manual – Chapter V – General Setup & Maintenance** - Section 1.6 – Probe settings.
- Perform the Tissue Sensitivity Determination of the A-Std probe in the **Probe Settings** menu of the General Setup screen. Refer to **ABSolu User Manual – Chapter V – General Setup & Maintenance** – Section 1.6 – Probe settings.
- If the axial length option was used, make sure to activate it when updating the software.

General information

- The documentation will still be present in the **?** of the ABSolu software if the **Documentation** folder has not been deleted in **D:\Quantel**.
- When installing the database factory, the **Keycode** remains activated.
- QUANTEL MEDICAL recommends installing new reports (contents, header and footers including the V.1.12 version). These are in **C:\Quantel\ABSolu\AppData\Reports\Contents**.

10. QUANTEL MEDICAL RECOVERY TOOLS

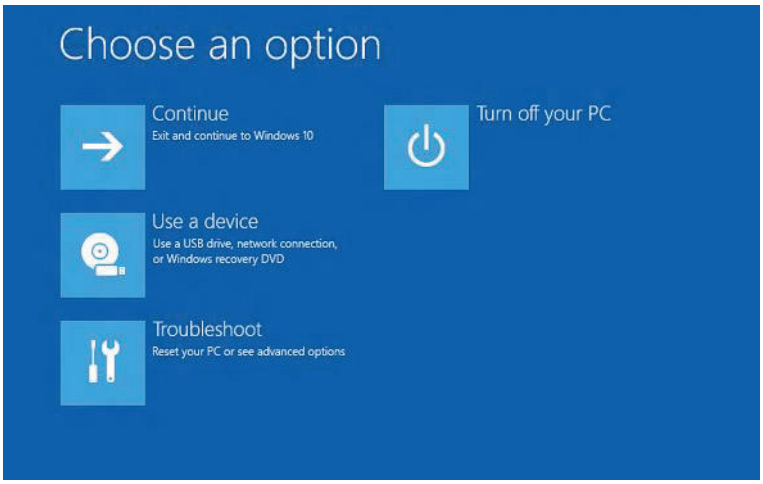
QUANTEL MEDICAL Recovery Tools is an entry in Windows Recovery Environment (WinRE). It enables to restore the ABSolu unit back to factory settings.

These recovery tools should be used only in case of major issues (e.g., hardware failure).

NOTE
Recovery Tools is available only on units from serial number 1104 and 1134 for ABSolu with S mode.

10.1 WinRE entry points

To access WinRE, launch the **Advanced startup** menu from Windows.



Options to launch access WinRE:

Option 1: From the **Start** menu

> Click the Power button in the **Start** menu. Then press and hold the **Shift** key while selecting **Restart**.

NOTE
If the unit is working correctly (e.g., no problems occur to access Windows Operating System), but the Windows configuration must be reinstalled, QUANTEL MEDICAL highly recommends option 1.

Option 2: Run REAgentC command

1. Right-click the Command Prompt application and select **Run as administrator**.
2. Enter the following command: `reagentc /boottore`
3. Restart the ABSolu from the **Start** menu. WinRE is displayed.

Option 3: Run `shutdown` command

> Run Command Prompt and enter the following command: `shutdown /f /r /o/ /t 0`

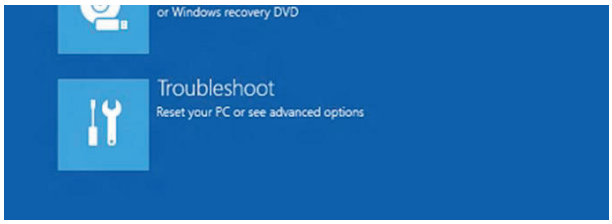
Option 4: Hardware recovery button combination

1. Press the main switch on the back panel to power on the unit. Then press the orange startup button on the front panel. When the Windows startup logo appears (see image below), press the main switch or startup button to power off the ABSolu.

2. Repeat step 1 for a second and third time. After the third restart, the **Automatic Repair** screen appears.
3. Click **Advanced options** to access WinRE.

10.2 Launch QUANTEL MEDICAL Recovery Tools

1. In WinRE, click on **Advanced options** (if available), then **Troubleshoot**.



2. Click **Quantel Medical Recovery Tools**. Windows restarts, then **QM Recovery Tools** appears (see image below).

The recovery tools enable to successively perform these steps:
- Back up data.
- Launch the recovery process (e.g., reinstallation).
- Restore data from the database.

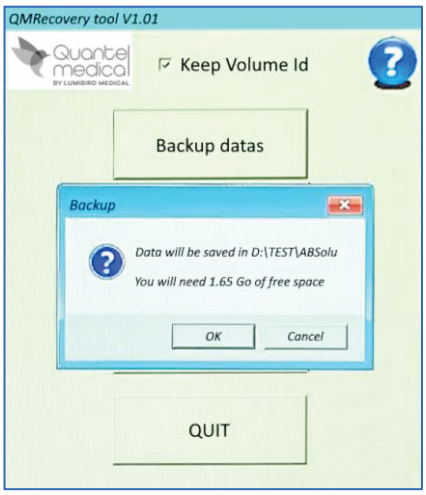
NOTE
The **Keep Volume Id** option should remain activated. This is to ensure that the keycode is still valid after the unit is set back to factory settings.

Step 1: Back up ABSolu data

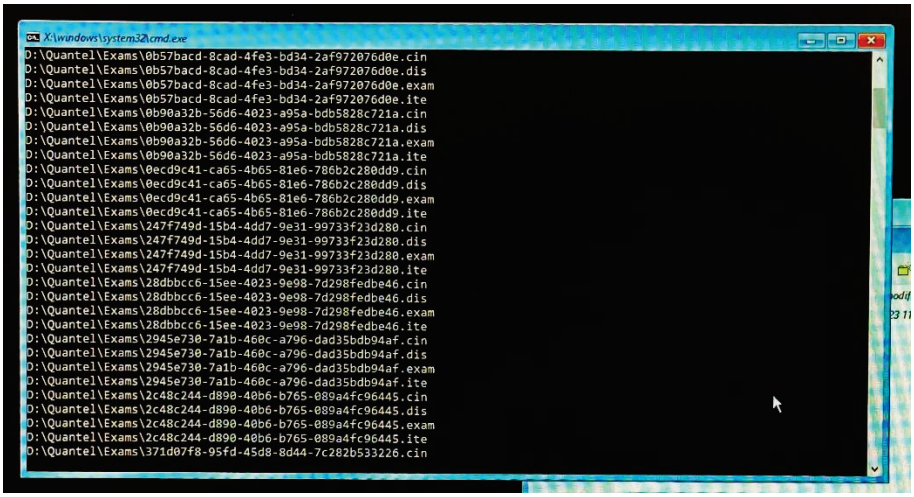
1. Connect an external storage (e.g., flash drive or external hard drive) to the ABSolu unit.
2. Click **Backup data**. The File Explorer appears.
3. Select the external storage as the backup location. Then click **Open**.

CAUTION
Note that any backup to a local directory will be deleted when launching the recovery process.

4. In the **Backup** dialog box, click **OK** to confirm there is sufficient free space in the backup location.



5. Once confirmed with **OK**, do not perform any actions (e.g., with mouse or keyboard) in the Recovery Tools menu. The backup process is automatically launched. This may take some time.

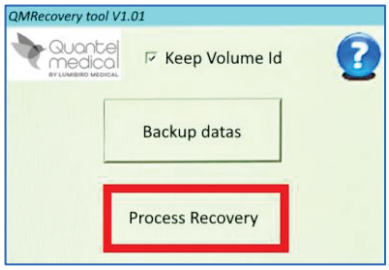


Once the backup is completed, the backup progress window (see image above) is closed automatically, and the Recovery Tools menu appears.

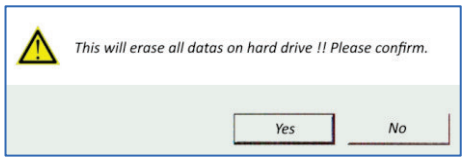
6. If needed, click again on **Backup data**. This is to verify that the ABSolu data has been backed up in the default “ABSolu” directory on the external storage. Then click **Cancel** to return to the Recovery Tools menu.
7. Disconnect the external storage.
8. Reconnect it to another computing platform, then verify that the data is present. This step is recommended to rule out the possibility that the external storage was formatted during the Recovery process.
9. If backup was successful, proceed with Process Recovery.

Step 2: Launch process recovery

1. Click **Process Recovery**.



2. Confirm with **Yes** to erase all data on **C:**.



Preparation for reinstallation starts in a new window: X:\windows\system32\cmd.exe.

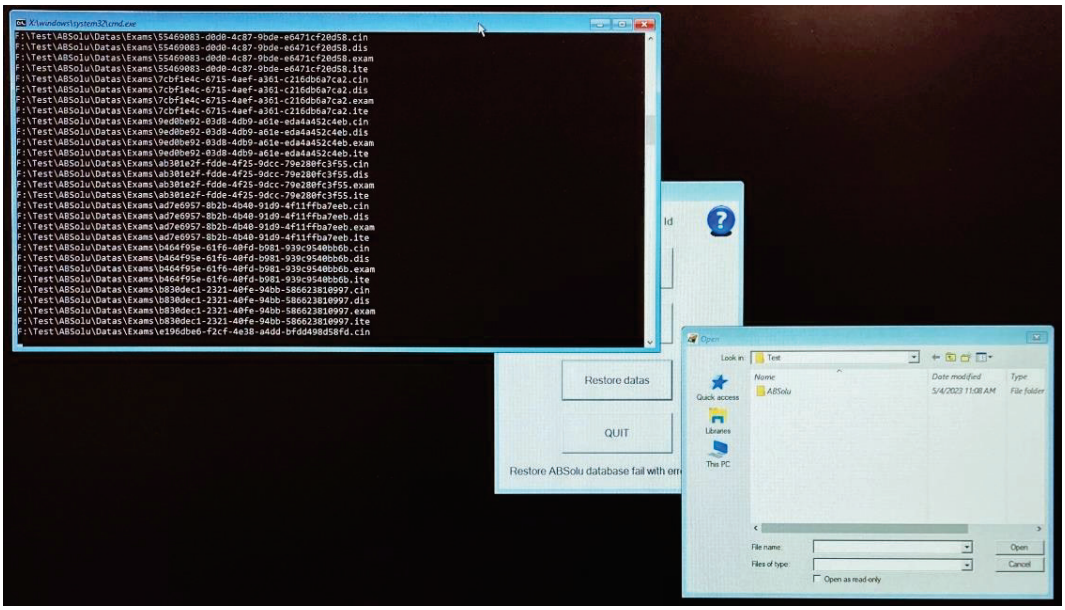
3. Enter “yes” and confirm with Enter to start reinstallation. This process may take some time. The reinstallation progress is shown in percentage.
4. When the operation is completed successfully, press Enter to return to the Recovery Tools menu.

Step 3: Restore ABSolu data

1. Click **Restore data**. The File Explorer appears.
2. Select the external storage, then the folder where the data is backed up.

NOTE
Do not select the **ABSolu** folder. This is to avoid any problems backing up data. If selected, the “Restore ABSolu database fail with error code : 3” message will be displayed at the bottom of the QM Recovery tool window.

3. Click **Open**. Do not perform any further actions (e.g., with mouse or keyboard). The restore process is automatically launched. This may take some time.



Once the restore is completed, the restore progress window (see image above) is closed automatically, and the Recovery Tools menu appears.

4. Click **Quit** to return to WinRE. Then choose one of these options:
   - Continue to Windows 10.

   Or
   - Turn off the ABSolu unit.

   After the restore, the ABSolu software must be set with probe or original database. For more information, **Probes Management and Calibration** and **Database Management**.

   For more details, please contact QUANTEL MEDICAL or the local distributor.

IMPORTANT

If the original database is not reinstalled, the ABSolu serial number in the **About** windows will be set as default. Contact QUANTEL MEDICAL to reinstall the serial number in the database.

11. UPDATE SOFTWARE

This chapter explains how to update the ABSolu software to version 1.0.5.

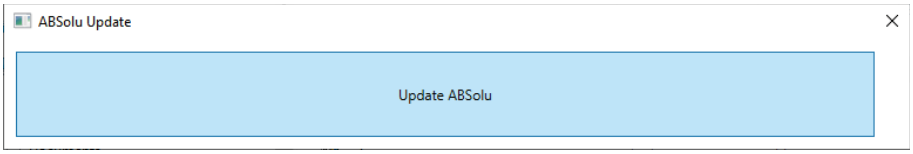
11.1 Before installing the software update

Before launching the software update, check the following prerequisites and information:

- The software can only be updated to version 1.0.5 from version 1.0.4.
- The installation process is composed of three steps:
  - Automatic backup of ABSolu data (settings, exams, reports...).
  - Installation of Microsoft .NET Framework 4.8.
  - Installation of ABSolu software version 1.0.5.
- After updating the software, the unit must be checked using the Certificate of Acceptance document. For more information, contact the Service Department.
- Refer to the previous Service Manual (December 2022 or earlier) for all information related to updating the software to version 1.0.4.

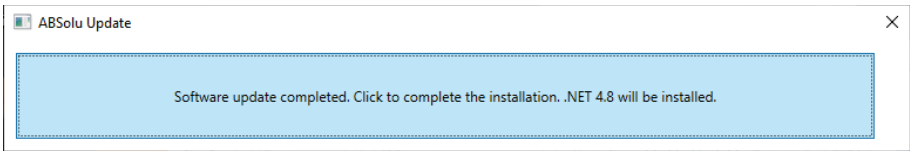
11.2 Install the update

1. Press **Alt+F4** to close the application and verify that it is no longer running in the background.
2. Insert the flash drive that contains the software update files.
3. Copy **ABSolu_V105_ImageContext_20231206_UpdateV104toV105.zip** to D drive.
4. Unzip the file.
5. Launch **ABSolu_Update.exe**.
6. Click **Update ABSolu**.

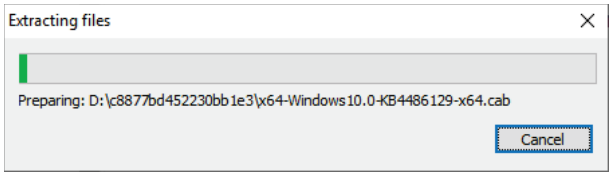


The software update is launched. This may take some time.

7. Click the button (see image below) to complete the software update and to proceed with the installation of Microsoft .NET Framework 4.8.

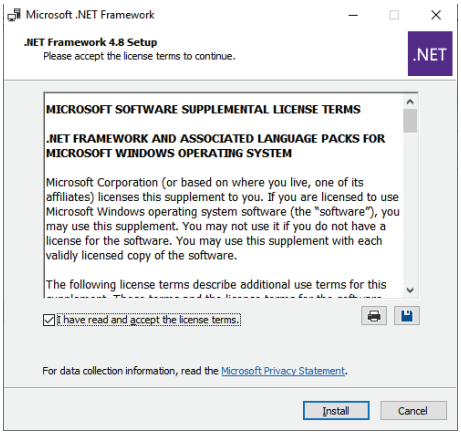


8. In the User Account Control dialog box, click **Yes**. File extraction starts.



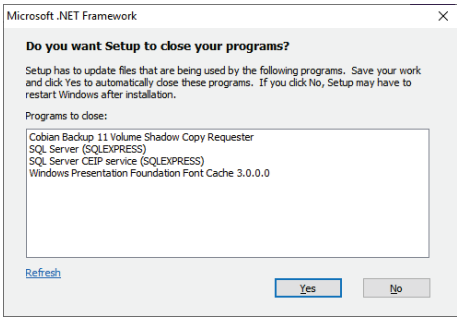
When the extraction is done, the Microsoft .NET Framework wizard is automatically launched.

9. Check **I have read and accept the license terms**. Then click **Install**.

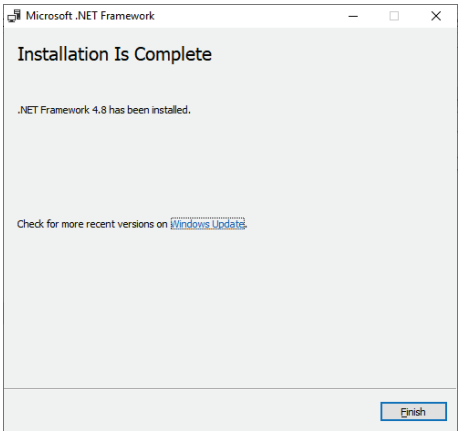


The installation may take some time.

10. To continue the installation, click **Yes** to close all the programs for which files must be updated (see image below).



11. Once the installation is done, click **Finish** to close the wizard.



12. On D drive, delete **ABSolu_V105_ImageContext_20231206_UpdateV104toV105**.

11.3 Update Windows

CAUTION

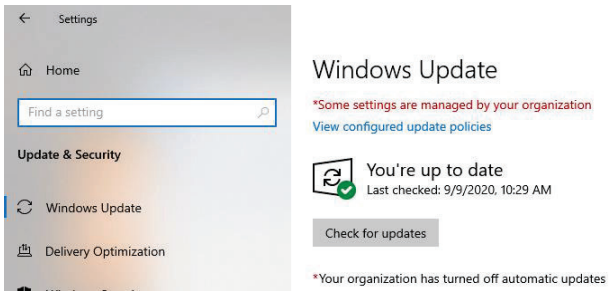
Ensure a secure internet connection and that the unit is protected with antivirus. If not, do not continue this chapter and, instead, proceed with the next chapter.

This Windows update is mandatory in case the STS option is activated. If STS option is not activated, this update is not mandatory, but highly recommended.

Reckon with approximately 30 minutes to complete the full procedure in this chapter (about 15 minutes per update).

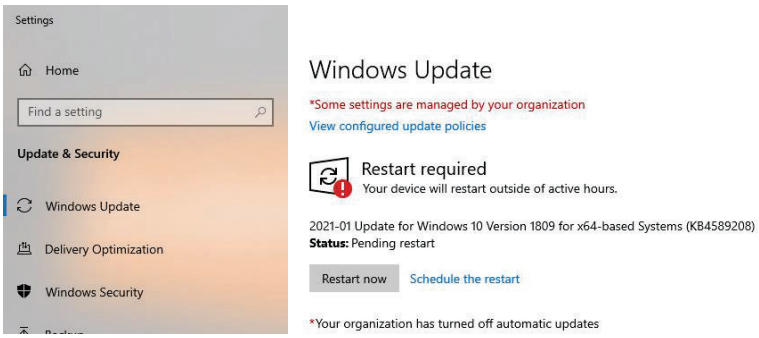
To check and launch Windows updates:

1. In the **Start** menu, select **Settings** > **Update & security**.
2. Click Check for updates.



Windows updates start automatically. This may take some time.

3. When all updates are completed, click **Restart now**.
4. When startup completed, close the application (**Alt**+**F4**) and verify that it is no longer running in the background.
5. Return to the **Start** menu, then select **Settings** > **Update & security**.
6. Click again **Check for updates**. Updates start automatically.
7. When all updates completed, click **Restart now**.



The application is launched automatically during startup. Go the next section.

11.4 Set default parameters

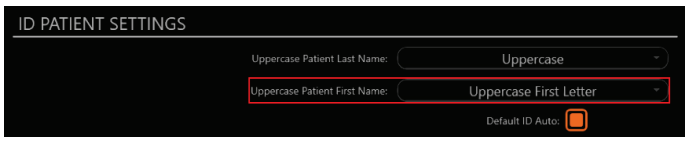
Step 1: Verify software version

> Check that software version 1.0.5 is correctly installed.

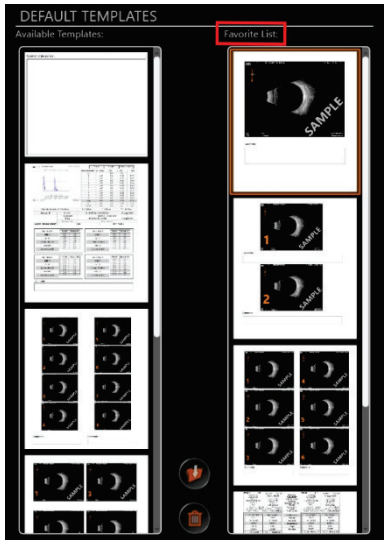
Step 2: Set parameters to default values in the application

> In the Welcome screen, go to the General Setup. Then set the following default parameters to keep previous parameters:

- **1 – Main Settings** Select **Uppercase First Letter** for the patient first name.

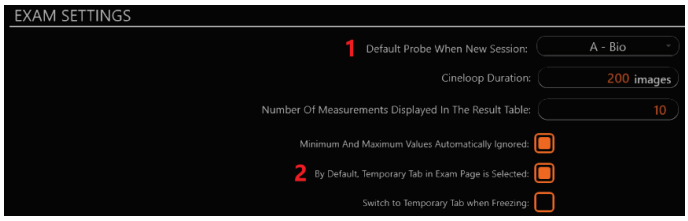


- **5 – Report Settings** Place these default templates in the **Favorite List**: IOL, 6 images, single image, and double image.



NOTE
If reports are displayed two times, delete the old generation of reports. QUANTEL MEDICAL recommends removing all reports and reinstall new ones, as mentioned in the user manual.

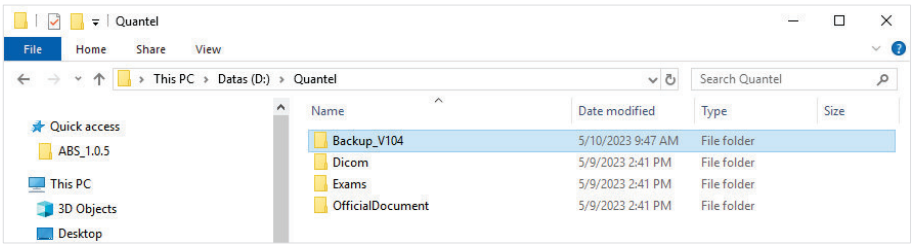
- **7 – Exam Settings** Select a default probe (**1**) and choose to display the temporary tab in the Exam screen by default (**2**).



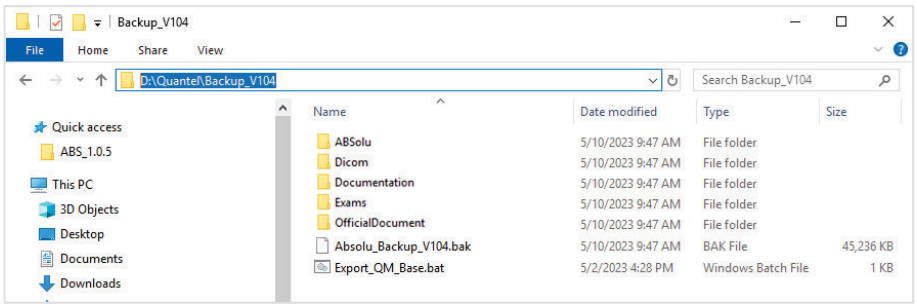
- 9 – Export Settings Clear **Activate the Word Icon in Report Screen**.

11.5 Check backup of data

1. When the update is done, verify that the data of the ABSolu from software version 1.0.4 was correctly saved during the automatic backup:
   - The **Backup_V104** folder has been created in D:\Quantel.



   - **Backup_V104** contains the following subfolders and files:

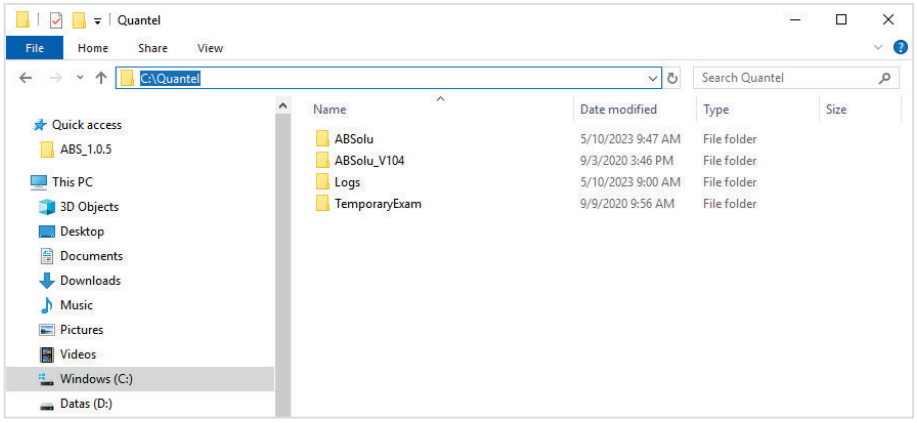


NOTE
The folders in **Backup_V104** are a copy of the ones present in D:\Quantel.

2. Verify these folders:
   - **ABSolu** includes the AVI, EMR, Hotline, JPEG, PDF folders.
   - **Dicom** includes the DICOM file. If the DICOM option is not activated, this file will not be present.
   - **Documentation** includes the documentation files which are available in the ? menu in the application. After the software update, the documentation files in the ? menu will be replaced by the default ones.
   - **Exams** includes the images and Cineloop which are present in the Exam screen of the patient files.
   - **Official Document** includes the reports and drafts present in the patient files.

11.6 Check software update

Once the backup check is performed successfully, verify that software version 1.0.5 is correctly installed in C:\Quantel (see image below):



1. Verify these folders:
   - **ABSolu** includes the new software version 1.0.5.
   - **ABSolu_V104** includes the software version 1.0.4. It will be impossible to launch this version (located in the V1.0.4 folder) after starting the update.
   - **Logs** contains the historical record (e.g., log files) of all actions performed in the ABSolu software, including errors.
   - **TemporaryExam** includes all the temporary files, which are present in the Exam screen.
2. Close all File Explorer windows.

11.7 Calibrate A-bio and A-ProBeam probes

If the A-Bio and/or A-ProBeam and/or A-Std probes are installed on the ABSolu unit, check the calibration in the **Probe Settings** of the General Setup.

Refer also to **Section 1.6 Probe Settings in Chapter V – General Setup & Maintenance** of the User Manual.

> Perform the A-Bio / A-ProBeam probe calibration.

> Perform the Tissue Sensitivity Determination of the A-Std probe.

> If the **Axial Length** option was used previously, activate it when updating the software.

11.8 General information

- The User Manual is present in the **?** menu of the ABSolu software.
- The keycode remains valid and will not be modified after the software update.
- QUANTEL MEDICAL recommends having the newest reports in case of a software update. They can be installed from C:\Quantel\ABSolu\AppData\Reports.
- New reports can be verified when selecting the **?** menu > **About...**. Then double-click the ABSolu logo.

Report contents, headers and footers including the latest file version number appear at the bottom of the **Software List** (see image below).

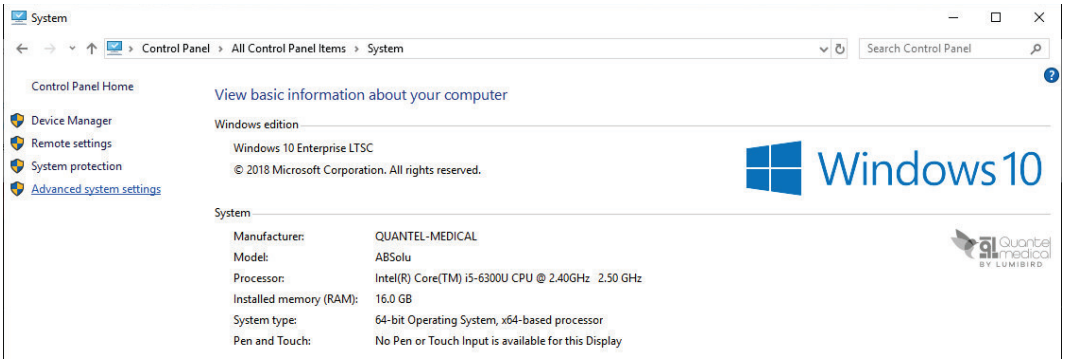
- After updating the software, the new **Advanced Caliper** tool is not available in version 1.0.5.
- STS (sulcus-to-sulcus) measurement is supported in software version 1.0.5. To activate this option, contact QUANTEL MEDICAL or the local distributor.

IMPORTANT
After updating the software, the unit must be checked using the Certificate of Acceptance document. For more information, contact the QUANTEL MEDICAL Service Department.

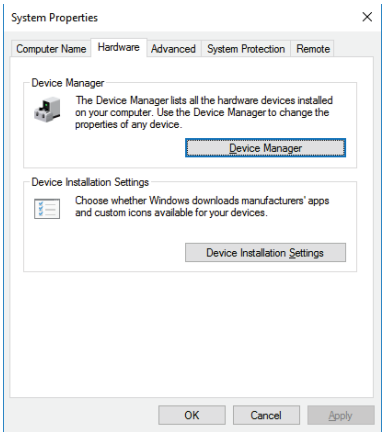
12. SUSPEND AUTOMATIC UPDATE

Follow the below procedure to avoid that the unit installs new Windows drivers.

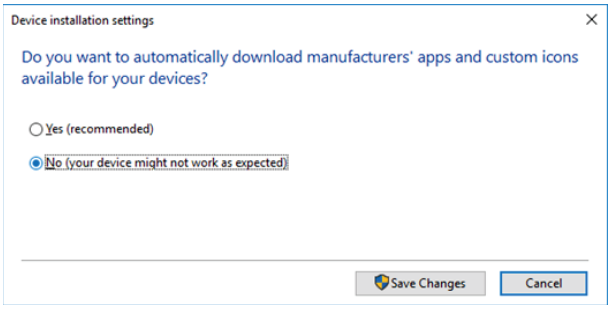
1. Select the **Control Panel**.
2. Click **System**.
3. In the left pane, click **Advanced system settings**.



4. In the **Hardware** tab, click on **Device Installation Settings**.



5. In the **Device installation settings**, choose **No** and click **Save Changes**.



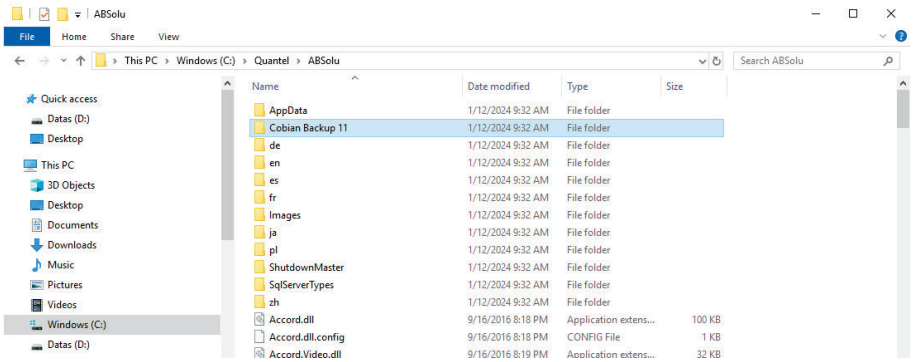
Automatic updates are now suspended. However, if these steps do not block automatic updates, QUANTEL MEDICAL recommends following the advanced procedure below.

- Press **Windows+R**.
- Click **Browse**.
- Enter this directory: **Gpedit.msc\Computer configuration\Administratives Templates\Windows components\Windows update\ConfigureAutomaticsUpdates**.
- Select **Disabled**.

13. USE COBIAN APPLICATION

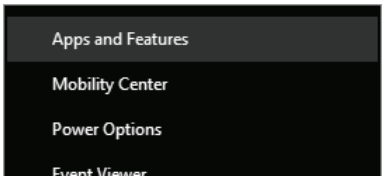
Cobian is an application that enables to perform automatic backups of the database and its data. On ABSolu with software version 1.0.4 or earlier, Cobian is installed in Windows.

From version 1.0.5, Cobian is embedded in the software and will be executed from the C:\Quantel\ABSolu directory (figure below). This is to avoid errors when changing a session while Cobian is still active.



When an ABSolu is updated to software version 1.0.5, QUANTEL MEDICAL recommends uninstalling Cobian in Windows:

1. Close the ABSolu application (**Alt**+**F4**).
2. Right-click the Windows Start Menu icon.
3. Select **Apps and Features**.



4. Select **Cobian Backup 11 Gravity** and click on **Uninstall**.

CAUTION
For ABSolu with software version 1.0.4 or earlier, Cobian remains to be installed in Windows. When using multiple sessions on the ABSolu, Cobian should be closed to avoid error messages. Refer to a previous Service Manual (December 2022 or earlier) for the installation procedure of Cobian in Windows.

14. SETUP MODE

14.1 Launch the application in setup mode

For service purposes, it may be necessary to launch the application in setup mode. This enables to access hidden features which are not available in normal use.

1. Close the application (**Alt**+**F4**) and verify that it is no longer running in the background.
2. Go to **C:\Quantel\ABSolu**.
3. Double-click the **Absolu.Presentation.Main - Setup** shortcut.

14.2 Setup mode functions

The list below summarizes the functions available in setup mode only.

Welcome screen:

- **Contact us** message
- **C** and **D** drive capacity are displayed in the upper right corner of the Welcome screen. If C:\ or D:\ capacity is less than 20%, both drives appear also when launching the software in normal mode.

General Setup:

- 1-Main Settings (See also **ABSolu User Manual: III – Using the ABSolu**).
  - Patient confidentiality.
  - HIPAA compliance.
  - Export settings. See **Export Patient Files**.
  - Import settings.
  - General Setup password.
- 3-Ultrasound Speed.
  - Speed for B mode and for S mode.
  - Number of segments of the Advanced Caliper tool and the ultrasound speed of each segment.
- 6-Probe Settings.
  - Test block.
  - Dyn D2.
  - Tumor Q1.
  - Axial length.
  - Zero.
  - Retina slope.

Exam screen:

- Precision adjustment of the probe detection for 15Mhz (B1), 20MHz-5A (B20-5A), and LIN 50MHz (BHF-50LIN) probes.

14.2.1 Keycode (options activation)

At the user's request, QUANTEL MEDICAL can generate a keycode using the unit Serial Number and Instrument ID.

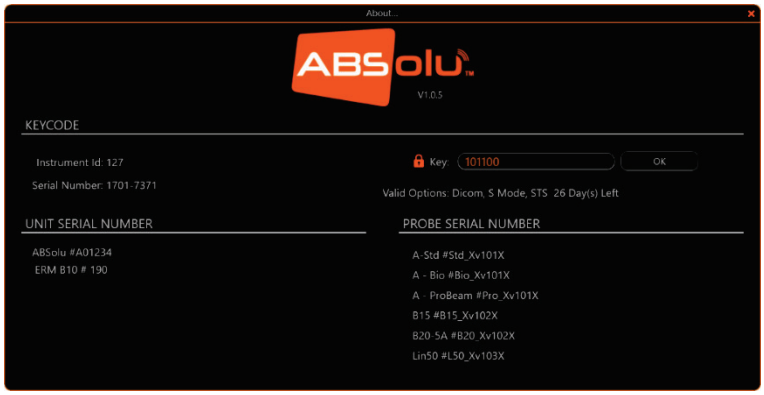
CAUTION
A new activation key is necessary when the hard drive or operating system is changing.

Based on the trial keycode (e.g., 101100), these options can be validated:

Combination	Valid option
1 0 0 0 0 0	DICOM
0 0 1 0 0 0	S Mode
0 0 0 1 0 0	STS
	For other keycode options (see below), please contact QUANTEL MEDICAL or the local distributor for more details.
0 1 0 0 0 0	Shared Database
0 0 0 0 0 1	Import XML
0 0 0 0 0 0 E	Patient Transfer

To enter a keycode:

1. Click the **?** icon and select **About...**.
2. Enter the keycode and click **OK**.
3. Restart the application to apply changes.
4. Verify the valid options in the **About...** dialog box (see example below).



NOTE
When the STS option is activated, QUANTEL MEDICAL recommends checking the probe measurement of the LIN 50MHz probe (BHF-50LIN). Once STS probe checking is completed, it is valid for 24 hours for all users on the ABSolu unit on which the procedure was performed. See also **ABSolu User Manual - Chapter V – General Setup & Maintenance** – Chapter 3 – STS Probe Check.

14.2.2 Retina Slope Test

Before any modification of the Retina Slope Test, contact QUANTEL MEDICAL.

The default value in this field is 6. It defines the sharpness of the retinal peaks in order to freeze the A-scan when the probe direction is in the visual axis, reaching the macula area. This value means that the slope is raised up by 6 digital points.

It appears that the retina slope test of .4. is perfect for physicians using the Prager shell in immersion technique. This shell holds the probe in its axis and helps to keep it perpendicular to the macula.

If the physician is not using the immersion technique, but the contact one, and has difficulties to find the visual axis, the Retina Slope Test should be set to 6. Increasing this value will make freezing easier.

14.2.3 Contact us message

> Click the **Question Mark ?** menu and select **Contact Us...**.

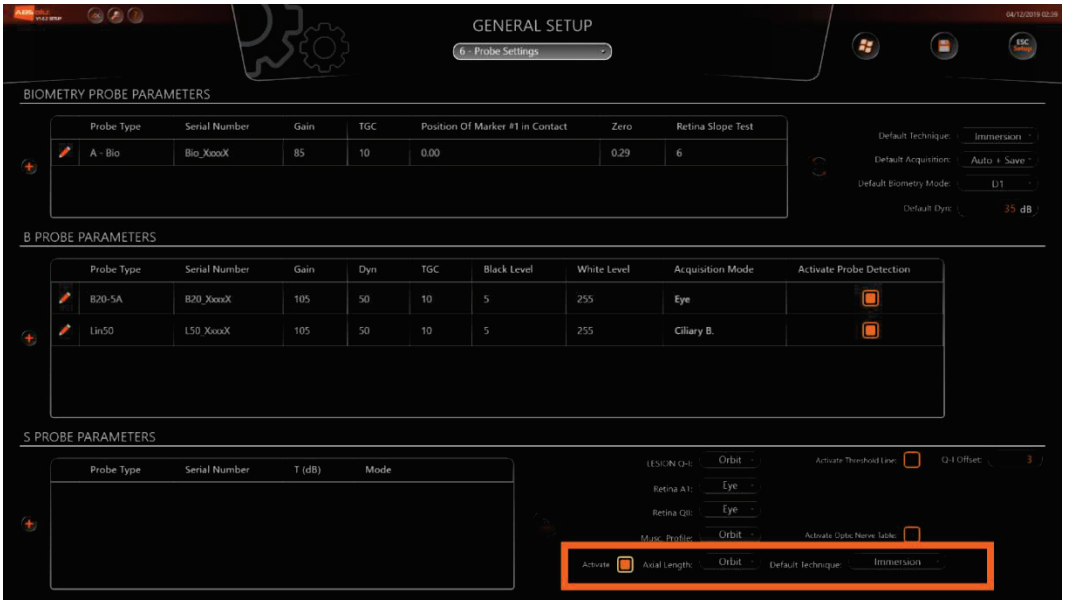
By default, QUANTEL MEDICAL information is displayed. If needed, the information can be modified.

14.2.4 Activate threshold line for LESION Q-I

1. In the General Setup, select **6-Probe Settings**.
2. Check **Activate threshold line for Tumor Q-I** to display the threshold line for LESION Q-I by default. Uncheck to deactivate.

14.2.5 Activate axial length

> Select **General Setup** > **6-Probe Settings** and activate/deactivate the **Axial Length** option.



14.2.6 Export patient files

If activated in the keycode, the Transfer Patient option enables to export a patient file to .absir format. This file format is proprietary of QUANTEL MEDICAL.

The default folder path is set in the **Export Settings** in the General Setup.

NOTE
Ensure referring to the General Data Protection Regulation and patient privacy laws applicable in the relevant country and hospital policy.

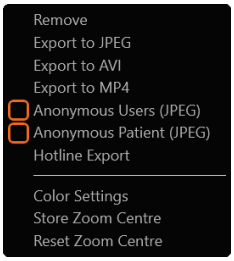
1. In the Welcome screen, search a patient and double-click on it to open the patient file.
2. Click the **ABSIR** icon:

The **Selection of Exportation Files** dialog box appears:

3. Select how to export files:
   - Select an exam date and click **Export Selected**. Only the selected exam will be exported.
   - Click **Export All** to export patient exams and patient data.
   - Click **Cancel** to abort patient file export.

14.2.7 Image and marker settings

> In the Exam screen, right-click on the image.



Additional functions in setup mode:

- **Color settings** Enables to change the color of exam tools (e.g., markers and calipers).
- **Store Zoom Center** After resizing the image surface in the examination area, this function enables to save these changes for future acquisitions.
- **Reset Zoom Center** Enables to set image surface size back to default values.

15. TROUBLESHOOTING

This chapter lists problems that may occur and explains how they can be resolved.

15.1 Application exits due to driver incompatibility

The application may crash when accessing the Exam screen or when starting an exam. This is probably due to an incompatibility of the Intel ® HD Graphics 520 driver with ABSolu resources.

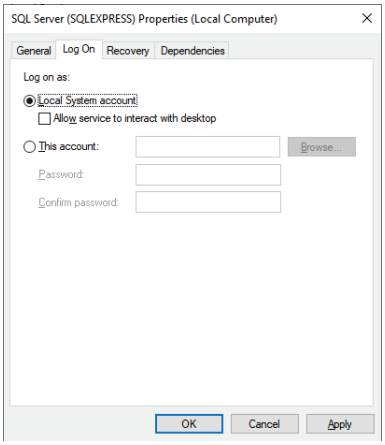
This problem occurs when the driver version is 25.20.100.6323. To resolve this problem, update the HD Graphics 520 driver. The procedure is available in the Service manual for software version 1.0.4 (MT00046B or earlier).

15.2 Access denied to database

When the ABSolu unit is connected to a domain, an access denied error may occur which causes the application to crash. If this error occurs, the log files will show that database access was not performed because of limited permissions on the database files.

To resolve this problem, follow these steps:

1. Press **Windows+R** to access the Run command window.
2. Type **services.msc** and press Enter.
3. Right-click on the **SQL Server (SQLEXPRESS)** entry.
4. Select Properties from the contextual menu.
5. Under the **Log On** tab, select **Local System Account**.



6. Click **Apply** and then **OK**.
7. Restart the ABSolu unit.

15.3 Absence of biometry table in Exam screen

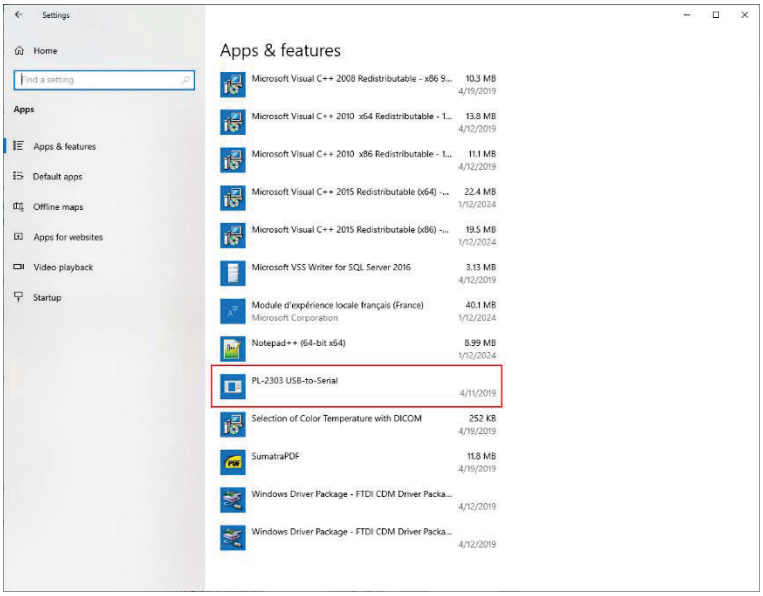
When the Biometry or B-scan probe (for Bio B) is selected in the Exam screen, it may occur that the biometry results table is absent while the biometry curve is displayed correctly. This is due to third-party software installed on the ABSolu unit:

- Thin2000 USB Display Adapter.

Or

- PL-2303 USB to Serial.

To resolve the problem, select **Start** > **Settings** > **Apps** > **Apps & features** to uninstall this software.

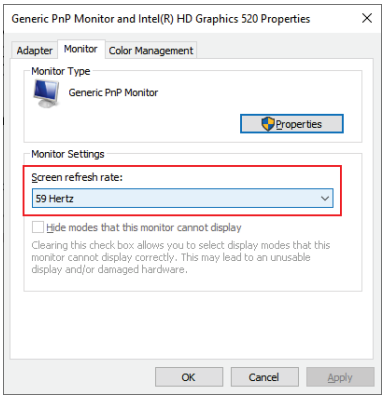


15.4 Misconfigured display resolution

A misconfigured display resolution may cause a bottom black screen of the ABSolu unit. For example, when opening a new browser window with a white background color, it may fade to almost black at the bottom of the screen. This may also affect the ABSolu software.

To resolve this problem, lower the screen refresh rate:

1. Press **Windows+I** to access Windows Settings.
2. Select **System** > **Display** > **Advanced display settings**.
3. Click on **Display adapter properties for Display 1**.
4. Under the **Monitor** tab, switch the screen refresh rate from 60 Hertz to 59 Hertz.



5. Click **Apply** and then **OK**.

15.5 Corrupted files error: unable to launch ABSolu software

On ABSolu units with software version 1.04, the following error message may occur when launching ABSolu software:

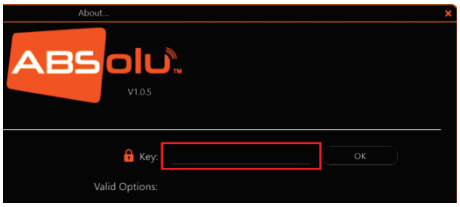
ABSolu software cannot be launched because the configuration files are corrupted.

To avoid this problem:

- Make sure to have launched the patch called **ABSolu_V105_CommandTimeout_Data_20230616**.
- Verify that the QM.Absolu.Data.dll file (dated June 16, 2023) has been installed only on the ABSolu with software version 1.04 (and not on a unit with version 1.0.5).
- ABSolu software V1.0.5 needs to be installed or if ABSolu software is **QM.Absolu.Data.dll** of V1.04 needs to be installed (date of the file July 31, 2020).

15.6 Unable to enter keycode: field not editable

On ABSolu units with software version 1.0.5, it may occur that the keycode cannot be entered because the field is grayed out (and thus not editable).



To avoid this problem:

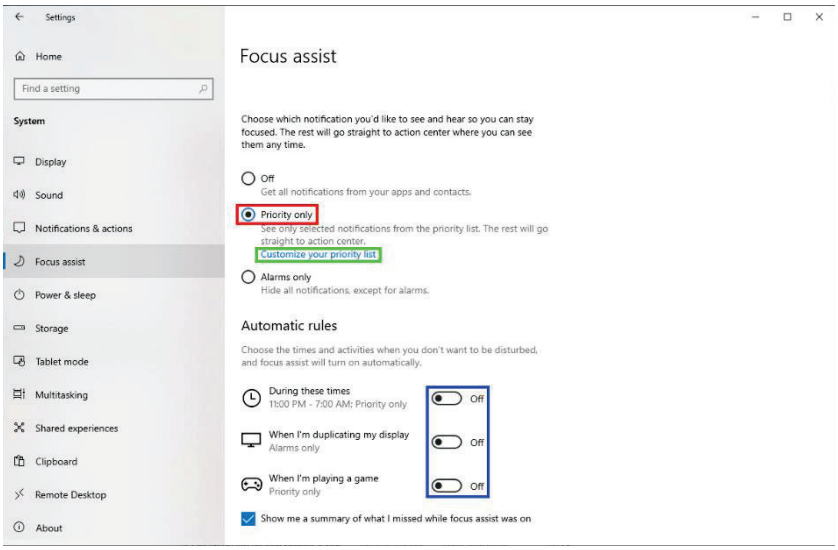
- Only use the ABSolu Windows session to enter or modify the keycode.
- Make sure to use binary code (e.g., 0000000 or 0101010) instead of the 10-digit combination used in software version 1.04 and earlier (e.g., 1234 or 12345).

15.7 No notifications when using an external screen

It may occur that notifications will not appear on an external screen if it is connected to the ABSolu unit with an HDMI cable.

To resolve this problem, customize the priority list in Windows Settings:

1. Select **Start** > **Settings** > **System** > **Focus assist**.
2. Choose notification options:
   - Select **Priority only**.
   - Turn off all **Automatic rules**. This is to ensure that notifications will appear after restarting the ABSolu unit.
   - Click on **Customize your priority list**.



3. Under the Apps section, check that the ABSolu application is listed. If this is not the case, click on **Add an app** and choose **ABSolu**.